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ABSTRACT

This staff paper reviews what is known about the effectiveness of education for the general population and for people with certain behaviors that put them at higher risk of human immunodeficiency virus (HIV) infection (certain male homosexual practices, intravenous drug use, certain heterosexual practices, and behaviors of some school-aged youth). Chapter 1 summarizes findings for the general population and for the four groups of high-risk persons in the areas of changes in knowledge and behavior, effectiveness of educational interventions, and implications for further work. The next two chapters review what is known about the effectiveness of education among the four groups with risky behavior and among the general population, respectively. Appendix A contains an overview of behaviors associated with HIV transmission and principles of health behavior that may be applied to acquired immune deficiency syndrome (AIDS) education. Appendix B describes studies related to AIDS education that are currently being funded by the federal government. Acknowledgements, references, 12 tables, and 4 figures are included. (NB)

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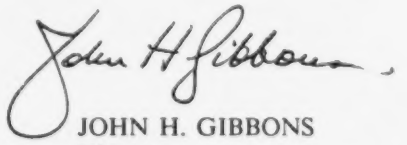
PREFACE

The impact of AIDS on the Nation's health and health care resources continues unabated. Congress has responded to the AIDS crisis with large increases in Federal funds for basic and applied research and education, and has begun to grapple with the difficult issues involved in financing AIDS-related health care. AIDS is also appearing on the agenda of an increasing number of congressional committees and raises numerous important issues that will require further congressional attention and decisions. These developments led to a recommendation by OTA's Technology Assessment Board, with encouragement from the Legislative Subcommittee of the House Appropriations Committee, that OTA provide assistance on AIDS-related issues to the Congress on a sustained basis.

This third paper in OTA's series of AIDS-related issues reviews what is known about the effectiveness of AIDS education for the general population and for people with certain behaviors that put them at high risk of becoming infected with the AIDS virus. AIDS education consists of communicating how the virus is and is not spread, counseling people to change behaviors that put them at high risk of becoming infected, and perhaps testing for HIV infection and providing devices such as condoms or bleach to prevent infection. This paper summarizes what is known about the effectiveness of AIDS education programs and programs in other health-related areas. Also documented are AIDS education programs currently being funded by selected Federal agencies. What is known and not known about the effectiveness of past education can guide the design of future AIDS education and the research agendas of Federal agencies.

The preceding Staff Papers in this series were: *Do Insects Transmit AIDS?* (September 1987) and *AIDS and Health Insurance - An OTA Survey* (February 1988)(see inside back cover for information on how to order these publications). A subsequent Staff Paper, *The Impact of AIDS on the Kaiser Permanente Medical Care Program (Northern California Region)*, will analyze the cost impact of the AIDS epidemic on one of the largest prepaid health care systems in the country. Previous OTA reports addressing AIDS-related issues include: 1) *Blood Policy and Technology* (January 1985), 2) *Review of the Public Health Service's Response to AIDS* (Technical Memorandum, February 1985), and 3) *The Costs of AIDS and Other HIV Infections: Review of the Estimates* (Staff Paper, May 1987).



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HOW EFFECTIVE IS AIDS EDUCATION?

Health Program
Office of Technology Assessment
U.S. Congress
Washington, D.C.

May 1988

A Staff Paper in OTA's Series on
AIDS-Related Issues

The views expressed in this Staff Paper do not necessarily represent those of the Technology Assessment Board, the Technology Assessment Advisory Council, or their individual members.

OTA Staff Paper--How Effective Is AIDS Education?

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INTRODUCTION

Blood, semen, and vaginal fluid are the principal routes through which the human immunodeficiency virus (HIV), which causes acquired immunodeficiency syndrome (AIDS) and other disease symptoms, is transmitted from an infected to a previously uninfected person. Since testing blood donations began in 1985, a person in the United States becomes at risk of infection chiefly by engaging in practices that transfer these substances from an infected person, through sexual behavior or by sharing equipment associated with intravenous (IV) drug use. Similarly, infected women may transmit the virus to their babies during pregnancy or shortly after birth. HIV appears to be much more difficult to transmit per exposure than other sexually transmitted diseases, such as gonorrhea, or than other blood-borne diseases, such as hepatitis B.[1] HIV also appears to be much more deadly than these other diseases. In slightly over 7 years, as many as 36 percent of homosexual men with HIV infection have developed outright AIDS, and an additional 40 percent have developed other symptoms of disease (90). By May 1988, at least 92 percent of the people with AIDS diagnosed during 1981 had died (192).

Ever-increasing knowledge of HIV indicates not only the gravity of this newly-detected disease but also the means to check its spread. Unlike the control of some other infectious diseases, prevention of new HIV infections lies largely within the control of individuals and their behaviors. As is the case for other sexually transmitted diseases (STDs), governments and communities using educational interventions can also play important roles in HIV control by communicating information, fostering social support, and providing the means for people to change and maintain certain behaviors. At present, control of HIV infection, however, depends mainly on the personal behavior of individuals.

This situation has led public health officials in the United States, the World Health Organization, and many foreign countries to stress education as the means to prevent further spread of HIV. Health education is a component of health promotion and disease prevention (117). Education regarding AIDS clearly includes the communication of information about how HIV is and is not transmitted and how to stay healthy or, if a person is already infected, how to avoid transmitting HIV to others. As used in this staff paper, the term AIDS education may also entail other activities to support behavioral changes related to disease prevention, such as testing to determine HIV antibody status and provision of devices, including condoms to reduce viral transmission through sexual behavior or bleach to reduce transmission through needle-sharing. Excluded from consideration here are aspects of prevention that do not relate to people's voluntary behavior, such as research to develop vaccines and screening of the blood supply. Education and individual behavior change are clearly important in the absence of effective medical interventions to prevent or cure HIV infection and AIDS. As shown by the history of and recent rise in syphilis rates, education and individual behavior will remain important even after effective preventive and therapeutic measures have been developed.

1 Researchers have estimated that the chance of transmitting HIV from an infected man to an uninfected woman during each episode of sexual intercourse is 1 in 500 (88). Following a needlestick involving an infected person, a health care worker's risk of becoming infected ranges from 6-30 percent for hepatitis B virus compared with less than 1 percent for HIV (180).

AIDS education has two purposes. First, educational programs are intended to influence people to adopt or maintain behaviors that prevent HIV transmission. This purpose applies to AIDS education for all groups, including efforts directed to people with risky behaviors and to the general population, which consists mostly of people at low risk. By changing their risky behaviors, people who are already infected can avoid transmitting the virus to others, and people who are not infected can protect themselves from the virus. Communicating accurate information on how HIV is spread and how to prevent transmission, providing the skills to effect desired behavior changes, and offering support for new behavior are methods to further this goal.

The second purpose of educational programs is to maintain and promote social cohesion, a goal that relates mainly to education for the general population. Correcting misconceptions about transmission and conveying information on how HIV is and is not spread are intended to relieve anxiety among people at little or no risk and to further the second goal. Possible changes in response to more accurate information include changes in knowledge about AIDS and changes in attitudes and behavior towards people who may be infected.

This OTA staff paper reviews what is known about the effectiveness of education for the general population and for people with certain behaviors that put them at higher risk of HIV infection: certain male homosexual practices, IV drug use, certain heterosexual practices among adults, and certain practices among school-age youth. The remainder of this chapter summarizes the findings and discusses their implications for further work. The body of the paper reviews what is known about the effectiveness of education among the four groups with risky behaviors and among the general population. Appendix A contains an overview of behaviors associated with HIV transmission and principles of health behavior that may be applied to AIDS education. Appendix B describes studies related to AIDS education that are currently being funded by the Federal Government. Appendix C acknowledges the valuable assistance of many individuals in preparing this staff paper.

SUMMARY OF FINDINGS

Changes in Knowledge and Behavior

The General Population

Considerable changes in knowledge and behavior have occurred in the United States since 1981 when the first AIDS cases were diagnosed here. By mid 1987, virtually every adult was aware of AIDS, and all but a few percent knew the major means of spread (50). The growth in knowledge among the general population testifies primarily to the ability of the mass media, chiefly television, to communicate information.

Despite these changes, however, the general population continues to hold substantial misconceptions about HIV transmission (18,50). Many of these misconceptions relate to infection through routine activities, such as believing that a person can become infected by working near someone with AIDS. Other misconceptions relate to preventive measures, such as not knowing that using condoms and spermicide can prevent infection. A persistent misconception is that one can become infected by donating blood. Accurate or improved knowledge has not necessarily been associated with effective changes in behavior. It may be appropriate that only a small portion of the general population has reported changing behavior in order to prevent HIV infection, since most people are at little or no risk. Most of the changes that people have reported, however, are ineffective, such as avoiding public places. People who may consider themselves at greater risk--blacks, young adults, and single people--have expressed more concern about AIDS and reported more behavior change, in both ef-

fective and ineffective ways. People reporting any change in sexual behavior were in the minority, but the percentage was sizable: 25 percent among blacks, 16 percent among young adults, and 16 percent among single people (18). Particularly noteworthy is the finding that decreases in people's misconceptions about HIV transmission paralleled declines in their support for governmental restrictions on people with AIDS, such as quarantine or mandatory testing (18).

People With Risky Behaviors

Dramatic behavioral change has occurred among homosexual males in response to the AIDS epidemic (37). In San Francisco, one study recorded that from 1985 to 1987 the proportion of homosexual men who engaged in receptive anal intercourse fell from 34 percent to 8 percent, and the proportion who engaged in insertive anal intercourse fell from 37 percent to 3 percent (68).[2] By 1988, less than 2 percent of uninfected homosexual men were becoming infected annually. Reports from other areas where the prevalence of HIV infection is lower (e.g., Los Angeles, Chicago, Baltimore, Pittsburgh) showed that as of 1986-1987, 55 percent of male homosexuals continued to engage in insertive anal intercourse, and 48 percent in receptive anal intercourse (78), sometimes despite knowledge regarding safer sex (202). Although more recent data on risk behaviors are not available from these areas, annual rates of new HIV infections among homosexual men enrolled in epidemiological studies are about 1 percent (150), rates comparable to the low rates recorded in San Francisco.

Many IV drug users had learned about AIDS from the mass media and from the oral communication networks within the drug-use subculture by as early as 1983, prior to the implementation of official education programs, and by 1984, had begun to change some AIDS-related behaviors (56,58). In New York City, for example, more than half of a group of methadone patients reported that they had made some change in their injection behavior. Few (14 percent), however, reported having changed their sexual behavior (82).

Where the prevalence of HIV infection among IV drug users is high (e.g., the prevalence of infection in the New York City area may be as high as 60 percent (185), reductions in risky drug-use behaviors may have occurred too late or may be insufficient to stem sharply the spread of the infection within the IV drug use community. As most IV drug users are male heterosexuals (56), their lack of adherence to safer sexual practices may cause their female partners to become infected. IV drug users report more changes in sexual behavior with casual sexual contacts (e.g., use of condoms with prostitutes) than with partners with whom they have a long-term relationship (56). This may, in part, be explained by evidence suggesting that when IV drug users who have learned that they are HIV antibody positive have attempted to adopt safer sex practices, such as condom use, with their long-term partners, the relationship has been disrupted (29). This finding is of concern because it is within the long-term relationship that children are likely to be conceived, and potentially infected with HIV, because contraception is often not practiced (56).

There is virtually no reliable information on the prevalence of high-risk behaviors among heterosexuals, and for heterosexuals at risk, on their level of AIDS-related knowledge and attitudes. One San Francisco survey suggests that as many as 17 percent of adult residents there are at risk for AIDS by virtue of their multiple or high-risk sex partners. Results from this survey show that those at risk do not perceive themselves to be at risk; although many respondents reported sex partners in AIDS risk groups, less than one-third reported feeling personally threatened by

2 Information on these and other changes in risky behaviors is typically based on reports from the respondents themselves. The validity of such self-reported behavior change is unknown. People may respond to surveys with the answers that they believe others want, or people may not practice the new behavior consistently or maintain it over time. Self-reports of high-risk sexual behavior and drug use, however, have been correlated with HIV infection (56,220).

AIDS, and only one-fifth had sought information on how to reduce their risk of getting AIDS (38). Many heterosexuals at risk for AIDS may be served by public STD clinics. Although these sites have been targeted for AIDS educational and testing activities, little is known regarding the AIDS-related knowledge and behaviors of STD clinic attendees (123). Similarly, although reproductive-age women attending family planning clinics have been targeted for AIDS-related educational activities, there is very little information available regarding this group's characteristics and specific risk factors that can be used to guide those designing AIDS educational programs.

Studies of HIV seroprevalence (the presence of HIV antibody in the blood) and AIDS risk factors among female prostitutes have shown that IV drug use is their major risk factor for HIV infection. In fact, HIV infection in non-drug using prostitutes tends to be low or absent. Many prostitutes have routinely used condoms with their customers since the 1970s in response to concerns regarding herpes infections and other sexually transmitted disease. Barrier contraception, however, is generally not used with steady sexual partners who may be HIV-infected (157).

Teenagers engage in both sex and drug behaviors that can transmit the HIV virus. For example, teenagers acquire more than one-quarter of the annual 20 million cases of STDs. Surveys have found adolescents very knowledgeable about how HIV is transmitted, but they are much less likely to know how HIV is not transmitted (112). Few students reporting sexual activity appear to be changing their sexual behavior because of the threat of AIDS, and of those who are, few have implemented effective changes. Of particular concern are youths at relatively high risk by virtue of a history of sexually transmitted disease and involvement in prostitution or IV drug use. Little information is available on black and Hispanic youth, but one survey found them less knowledgeable than whites about HIV transmission (62).

Effectiveness of Educational Interventions

For AIDS education and for education in related areas of health behavior, efforts to judge the effectiveness of interventions have been handicapped by program designs that do not lend themselves to evaluation. Many factors besides a particular educational program are likely to influence a person's knowledge, attitudes, and behavior. To gauge the effectiveness of a specific program requires separating the effects of the program from the effects of other factors. Research methods call for comparing changes within a group that received an intervention (the experimental group) with changes within a comparable group that did not (the control group). Alternatively, researchers may evaluate different educational strategies by comparing changes among groups that received different interventions. Rarely have such research designs been applied to evaluate AIDS education for the general population or for people with certain risky behaviors.

Perhaps it is not surprising that early AIDS education programs lacked rigorous research designs. Faced with a new and usually fatal disease, the immediate concern of organizations funding programs and public health workers implementing them was to curtail the spread of HIV infection. As a result, however, knowledge about the effectiveness of particular programs and of specific elements of programs has been slow to accumulate. The dearth of basic information on sexual behaviors in the United States has exacerbated the situation. Some Federal agencies, such as the National Institute on Drug Abuse (NIDA) and the National Institute of Mental Health , are requiring some of their AIDS education programs to include evaluations that conform to principles of research methodology (see appendix B).

General Population

Although substantial gains in AIDS-related knowledge and behavioral change

occurred within both the general population and among AIDS risk groups prior to the implementation of AIDS educational interventions, the experience of programs related to HIV transmission and to other public health concerns suggests that education has the potential to promote further changes in knowledge and behavior.

Although several public health campaigns for the general population have not produced the behavior change desired, others have shown that education through the mass media can change health-related beliefs and behaviors. Use of the mass media achieved success in reducing smoking prevalence and in reducing people's risk of cardiovascular disease (69,75). Furthermore, the effectiveness of an educational program has been greater when the use of mass media has been supplemented with interpersonal communication and development of skills to implement new beliefs and motivations.

As illustrated by dissemination of AIDS information, the media can set a social agenda, that is, their coverage can heighten public awareness of an issue and stimulate people to ponder and discuss it. Factual information provided by the media can reduce misconceptions and fear about HIV transmission and can alert people with risky behaviors to their susceptibility and direct them to more detailed information. Media presentations can also legitimize efforts to reduce the stigma associated with HIV infection and to prevent further spread of HIV.

A particular problem regarding AIDS education is the skepticism that people have reported about messages from public health experts (147). A survey to be conducted by the National Center for Health Statistics in June 1988 will collect information on the public's perception of the credibility of AIDS information from Federal public health officials. Like other health education to promote behavior change, AIDS education also faces the problem of retaining people's interest and maintaining safer behaviors over time.

Certain Sexual Practices of Homosexual and Bisexual Men

Community-based educational approaches to controlling HIV transmission seek to provide people with information, skills, and social support conducive to adopting behaviors that will reduce the spread of infection. Some analysts have attributed the dramatic changes in sexual norms within the San Francisco homosexual community in part to community-based AIDS risk reduction programs. At least six elements characterize the model: 1) strong leadership from within the homosexual community; 2) market research techniques to identify appropriate messages and communication channels for reaching the target audience; 3) implementation of programs to inform and motivate target audiences; 4) a focus on facilitating social and cultural change; 5) reliance on multiple channels of communication, including both media, such as print and broadcast, and face-to-face interventions; and 6) broad-scale, grass-roots participation in program design and implementation (37). At the same time, continual research documented initial levels of high-risk behaviors, changes over time, and factors related to failure to change.

Unfortunately, there is limited evidence to link any aspect of the program to the behavioral change observed. Furthermore, given the unique composition of the San Francisco homosexual community, even if the model was found to be successful there, it might not be applied successfully in areas where homosexuals are not open about their sexual orientation and do not identify with the homosexual community. On the other hand, the success of San Francisco's community-based program is consistent with the results of similar programs to reduce pregnancy among teenagers and to reduce cardiovascular risk among the general population, as described below. The results of evaluations of six CDC-funded AIDS Community Demonstration Projects and several Innovative Projects for Risk Reduction should provide some information on the

effectiveness of community-based programs implemented in other geographical areas (see appendix B).

There is some evidence that homosexual men who have learned that they are HIV antibody positive through voluntary testing programs have reduced risky behaviors more than men who have learned that they are seronegative or who have remained unaware of their antibody status (35,133,216). Not all studies, however, report a positive effect of HIV antibody notification; some indicate that those learning of positive HIV antibody status increase risky sexual behaviors (104). Moreover, some mental health problems may be associated with learning of one's positive test results (105). In low prevalence areas, tracing the sexual contacts of those testing positive and offering them counseling and testing may help identify individuals unaware that they are at risk. Behavioral followup could be incorporated into such programs to see if they are, in fact, successful in reducing high-risk behavior.

Special interventions are needed to assist those having difficulty adopting or maintaining safe sexual practices. Multi-session, face-to-face programs show promise (108,37); however, longitudinal studies will be needed to assess their long-term impact on risk behaviors.

The Federal Government is funding several studies that examine the effects of HIV testing on behavior. For example, this issue is being considered in the CDC's AIDS Community Demonstration Projects and AIDS Prevention Projects (see appendix B).

IV Drug Use

The most effective method for IV drug users to avoid HIV infection is to stop injecting drugs, and for most, this requires formal treatment. The longer a person spends in treatment, the greater have been the reductions in IV drug use (56). A New Jersey program that provided vouchers for treatment was successful in getting many IV drug users into long-term treatment (56). Furthermore, the program brought young black males into treatment, a group previously underrepresented in the State treatment system because of financial barriers (99).

Although the threat of AIDS appears to be motivating IV drug users to enter treatment, further research on the long-term outcomes of drug treatments is needed. NIDA is currently funding programs targeted to IV drug users in treatment as well as out of treatment. Some programs will chart the natural history of drug use, others will evaluate interventions to curtail the practice (see appendix B).

A shortage of treatment programs has prevented some IV drug users from entering treatment, and some have rejected treatment as an option. For drug users who continue to inject, alternative approaches to reducing HIV transmission are to distribute bleach that IV drug users can use to clean their equipment and to exchange their used needles for sterile ones. Almost half the IV drug users in a San Francisco project reported using bleach that was distributed (31). It is not clear from the study design and the information available, however, whether using bleach slowed HIV spread. Needle-exchange programs have not been officially attempted in the United States. The results from other countries suggest that use of such programs has increased, but do not indicate whether providing sterile needles has slowed HIV transmission. Since new infections have occurred in areas where only bleach distribution has been tried, researchers have suggested evaluating a combined program of bleach distribution and needle exchange (31).

Some uncertainty exists regarding the impact of IV drug users' learning of their HIV antibody status. In some areas, IV drug users who knew their positive antibody status showed greater risk reduction than those testing negative (29,42). In other areas, however, after an educational program, IV drug users in treatment reduced their risky behaviors, and the behavior changes occurred irrespective of the drug user's antibody status or awareness of the results of the HIV antibody

test (125). More long-term followup is required to understand fully the impact of HIV testing in different areas. When testing is available, programs to assist those IV drug users identified as positive to seek appropriate medical care and to minimize risk to others are needed. Preliminary data from one study showed significant changes in the use of condoms within long-term relationships when one-on-one counseling was provided to infected IV drug users and their primary sexual partners (125).

NIDA is funding several projects to study HIV testing and the IV drug user. This well-designed research incorporates experimental and control groups, which will permit analysis of the effects of the interventions. Some projects will be evaluated individually as well as by an independent organization (see appendix B).

Certain Practices of Heterosexual Adults

No formal evaluations of AIDS educational programs implemented within clinics serving high-risk heterosexuals are available. Data are available, however, from evaluations of STD-related educational programs implemented within STD clinics. Although one would expect patient motivation to change behavior in the face of a treatable STD to be less than the motivation to change in the face of a fatal illness such as AIDS, some of the findings from evaluations of STD educational interventions may be relevant to AIDS interventions.

The results of evaluations of educational interventions in STD clinics suggest that special educational interventions can improve knowledge and can affect attitudes toward preventive behavior. Person-to-person interviews appear to be more effective than other methods, such as the use of videotapes and special educational materials. Results have not been encouraging from studies that have attempted to measure actual changes in risk behavior attributable to an educational program. For example, neither distribution of free condoms nor special counseling was effective in reducing STD reinfection (46,171). Provider performance, however, has influenced patient compliance with a recommendation to return to clinic (118). Given that the provider-client interview appears to be a preferred medium of communicating STD information and that the performance of the counselor affects client compliance, resources may be effectively used to ensure the quality of providers of AIDS and STD services (e.g., comprehensive training, continued education opportunities, interventions aimed at reducing provider stress and burnout). Developing and providing interventions that are sensitive to cultural differences among minority groups merit particular attention.

Innovative approaches are required to facilitate behavioral change for certain heterosexuals considered at high risk of HIV infection. For example, interventions to "empower" women who may be involved in dependent relationships (e.g., prostitutes and partners of IV drug users) to encourage their partners to use condoms without, at the same time, jeopardizing themselves are being evaluated (see appendix B). Within family planning clinics, the CDC is funding activities related to AIDS education for women who may be at high-risk of HIV infection (21). The clinics assess women's risk, counsel them on ways to reduce their risk, and offer to test them for HIV antibodies.

Certain Practices of School-Age Youth

AIDS educational programs implemented within schools have been successful in improving adolescent knowledge, but the impact on changes in risk behaviors has not yet been evaluated. The goals of sexuality education are similar to those of AIDS education: to reduce or modify teen sexual activities to curb pregnancy and STDs other than AIDS, and to improve teens' sexual self-awareness and communication skills. It is therefore instructive to look at the evidence of success of these programs.

Results from numerous evaluations indicate that sexuality education programs increase factual knowledge about sexuality and

sexually transmitted disease but, in general, have little measurable impact on attitudes or behaviors (112). There are some important exceptions. One program using intensive cognitive-behavioral training that taught communication and problem-solving skills through role playing and rehearsal seems to have been effective in improving communication skills and attitudes compatible with lowering the risk of pregnancy (160). Particularly noteworthy are the results of a community-based program implemented in a rural South Carolina community. Using parents, churches, schools, the media, and other community organizations, this program seems to have been successful in lowering teen pregnancy rates (205). Further research to replicate these results is important because the contribution of different elements of the program is not clear, and the number of teenagers involved was small.

Although education on AIDS and sexuality appears to increase adolescent knowledge, there is little evidence that youth translate such knowledge into changes in their risk behaviors. That teens often do not apply their knowledge of risks to their personal situations is a recognized impediment to behavioral change. In the case of HIV, students may not consider infection a personal threat because most teens do not know someone with AIDS. Some have suggested that information about AIDS be presented within the context of other, more prevalent STDs, such as gonorrhea and herpes simplex, with which adolescents may have greater familiarity (61). Programs most likely to succeed in changing adolescents' behavior are those that relate the information to their personal situations and that use techniques such as role playing to teach communication skills and to reinforce new peer group norms.

AIDS educational efforts could be integrated into community-wide programs that reinforce the adoption of different behavior. That many adolescents initiate sexual activity before high school suggests that educational programs be implemented in elementary and middle schools. Because some high-risk adolescents may not be reached through school-based AIDS educational interventions, programs could be targeted to adolescents in settings, such as juvenile detention centers and shelters for the homeless, that include teenage runaways. The National Institute of Mental Health is funding evaluations of AIDS prevention activities for adolescents who seek services at shelters for runaways or at agencies serving homosexual youth (see appendix B). The CDC is funding 15 State education agencies, 12 local education agencies, and community demonstration projects that are focusing on youth in and out of school (see appendix B).

Implications for Further Work

Studies Designed for Evaluation

Although experience indicates that public health campaigns can achieve knowledge and behavior change, it is not clear which components account for successful vs. unsuccessful results or which combinations of components are more effective than others. This gap in understanding pertains to educational interventions for people at high risk and for the general population.

The problem with AIDS education and other programs of public health education is that programs have rarely been designed to evaluate the effectiveness of interventions or to isolate the effects of different components. Without such insights, those planning educational interventions cannot determine which components are vital for success and which can be eliminated. Such information is especially important because public health programs at all levels of government face restricted budgets; formulating AIDS education programs and allocating resources among AIDS education and other health activities require knowledge of the effectiveness of different interventions.

The National AIDS Information Campaign being conducted by the CDC illustrates this situation and how it is being addressed. During fall 1987, the CDC distributed public service announcements to broad-

cast media throughout the country. NCHS conducted surveys of AIDS knowledge before and after the campaign, but it would be difficult to attribute any changes to the campaign as opposed to other information sources. More information to evaluate the program will be available from a survey planned for summer 1988, after the CDC sends an AIDS pamphlet to every household. In that survey, NCHS will examine whether people received and read the information.

Some measures of the process of the campaign are available to the CDC. Although total press stories on AIDS decreased during the last quarter of 1987 (190), during this period television and radio continuously increased their broadcast of the CDC's public service announcements, and calls to the AIDS hotline rose greatly (204). Correlations between the use of the announcements and hotline calls within local areas could provide a measure of public response to the campaign.

To evaluate the effectiveness of different components of the campaign, the CDC could systematically vary the content or dissemination of messages within an area. With the concurrence of the States, different approaches might be tried within a State or across States. The insights gained could be used to increase the effectiveness of subsequent phases of the campaign.

Even when AIDS education programs have been evaluated, most have not used rigorous research methods. Rarely have those undertaking educational programs compared changes within a group that received an intervention (the experimental group) with changes within a group that did not (the control group). Nor have they systematically varied the intervention among different groups and compared the results. For the most part, educators aware of the risks of AIDS have understandably concentrated on implementing programs intended to change behavior. In the absence of appropriate research designs, it is difficult to interpret the results of evaluations that have been performed. It is also difficult to interpret the potential impact of a program if the characteristics of program participants and how they differ from the risk group at large are not provided. An educational program may appear to be successful in changing risk behaviors if the experience of a group of self-selected program volunteers is studied. Program success, however, may be more a function of the characteristics of the participants than of the program itself.

Some recently-funded research projects will employ research designs to avoid such potentially misleading results. For example, one investigator funded by NIDA will randomly assign IV drug users admitted to a residential detoxification program to one of three different interventions to evaluate their relative effectiveness (see appendix B). Although such an approach may not always be feasible, careful design of the evaluation component of an educational intervention, before a program is implemented, is key to gaining an understanding of what elements are effective and ineffective.

To facilitate comparisons of the results of evaluations conducted in different areas, it would be helpful to standardize the measurement of outcomes of interest (e.g., changes in specific types of sexual behavior). For example, simply standardizing the interval and length of followup of subjects involved in research studies would be helpful (37). The type of data that is advisable to collect might change over time. For example, since HIV antibody testing is more widely available, it would be helpful if those evaluating interventions to change the behavior of homosexual men, in addition to recording the number of encounters of unprotected anal intercourse, recorded whether their partners were infected with the virus. Although unprotected anal intercourse between two seropositive individuals is inadvisable, it does not contribute to new cases of infection.

Targeting Information to Specific Groups

Developing effective educational interventions requires that planners know for each target group what knowledge and behavior they wish to change. Such insights are espe-

cially important with AIDS education, since the populace already has a high level of knowledge (accurate and inaccurate) about AIDS and HIV infection (18,52). Moreover, such information is needed to develop culturally sensitive messages for different ethnic groups.

For the general population, NCHS surveys can provide continuing information to identify which beliefs and attitudes to address in future programs, and NCHS is exploring appropriate methods to collect information about behaviors that put people at risk of HIV infection (217). These data, however, are not likely to be adequate for program planners at the local level. For example, those planning to implement educational interventions within family planning or STD clinics will need to conduct baseline surveys of client knowledge, attitudes, and behaviors so that the programs can be tailored to meet specific community needs. Furthermore, some community-based surveys may be needed to see if AIDS programs located within the community are appropriate and accessible to members of high-risk groups located within the community.

An important aspect of having education reach the intended audience is tailoring the content and dissemination of messages to reach people at high risk. AIDS has disproportionately affected blacks and Hispanics. It is important that educational messages associate HIV infection with certain risky behaviors rather than with membership in a certain group. At the same time, communicating information effectively requires that messages take into account the language, literacy level, and cultural sensitivities of the people to whom they are targeted.

Reaching people in various social and cultural subgroups requires different approaches. Further research is required to understand the characteristics and risk behaviors of people in different groups. Among IV drug users, further research is required to understand the impediments to changes in sexual behavior, especially within long-term relationships. Few educational programs have been targeted to homosexual and bisexual males who are black and Hispanic, who have low educational levels and low incomes, or who are adolescents, and little is known about how to reach these groups.[3] Such research may suggest new counseling approaches. Within the Department of Health and Human Services, the Office of Minority Health and the CDC National Information and Education Program are planning special efforts targeted to people in minority groups (see appendix B). Given the importance of reaching people who are disadvantaged and who are members of minorities, it is essential to adequately evaluate these projects and to incorporate their findings into future educational programs.

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3 Most homosexual men studied to date have had high educational attainment and have been upper-middle class.

CERTAIN PRACTICES OF HOMOSEXUAL AND BISEXUAL MEN

Introduction

AIDS was first identified among homosexual and bisexual men and continues to be a disease primarily affecting this group; a total of 63 percent of the reported adult cases in the United States are among homosexual and bisexual men without other known risk factors. An additional 7 percent of cases have occurred among men who are both homosexual and IV drug users (192). Epidemiologic studies have demonstrated that for homosexual men, anal intercourse practiced without the use of condoms is the major risk factor for HIV infection. In one study, unprotected receptive anal intercourse could account for nearly all of the 95 new infections detected among 2,507 initially seronegative men after six months of followup. The gradient of risk of seroconversion accelerated in proportion to the number of receptive anal partners, from about three-fold for one partner to 18-fold for those with five or more partners (110). The risks associated with oral-genital, manual-anal ("fisting"), and other sexual activities other than unprotected anal intercourse are unknown. Epidemiologic studies have not been large enough to include sufficient numbers of men engaging in these practices to detect a small relative risk associated with such practices (37).

Safer-sex guidelines generally list the use of condoms during anal intercourse as "possibly safe" rather than "unsafe." Although several laboratory studies have demonstrated that latex condoms are effective physical barriers to HIV, the effectiveness of condoms in preventing HIV transmission is not established. Data from epidemiologic investigations, however, do show consistent previous condom use to be associated with seronegativity (189).[1] The spermicidal agent, nonoxynol-9, has been shown in the laboratory to inactivate HIV and when used with condoms, may enhance their effectiveness (37).[2]

The prevalence of infection among homosexual/bisexual men varies greatly by geographic region. In San Francisco, about half of the homosexual men are infected. (New York City may have a similar seroprevalence rate (37).) This level of infection was recognized by the latter half of 1984 and has remained relatively stable (i.e., there have been relatively few new infections) (220). Evidence from epidemiologic studies in San Francisco suggest that by 1988, less than 2 percent of seronegative homosexual men were being infected annually (218). The current rate of new infections among homosexual men in some areas of intermediate prevalence also appears to be very low (150). Areas of intermediate prevalence (10 to 30 percent homosexual men infected) include Miami/Fort Lauderdale, Los Angeles, Houston, and Washington, D.C. (37). Seroconversion rates may be higher than these epidemiologic investigations suggest. Participation in studies in which detailed questions about sexual behavior are asked may, in itself, modify risky behavior (37).

The exact size of the population of men at risk for HIV infection because of their

1 The effect of condom use among the heterosexual spouses of patients with AIDS was evaluated (189).
2 Studies designed to estimate the effectiveness of condoms in preventing HIV transmission are underway (37).

homosexual practices is unknown. Although recognized as unreliable, data from the late 1940s (111) are usually used to estimate the size of the U.S. homosexual male population. Using these data, the Public Health Service estimated that 4 percent of all males were exclusively homosexual (representing 2.5 million men between the ages of 16 and 55) and a total of 5 to 10 million men had at least some homosexual experience (185).

Changes in AIDS-Related Behaviors

Dramatic AIDS-related behavior changes have been documented within the male homosexual/bisexual community. In fact, the degree and kinds of behavioral changes that have occurred exceed anything documented to date in the public health field (35). The extent of behavioral change, however, varies substantially by geographic area. At one extreme is San Francisco, where a 92-percent reduction in unprotected insertive anal intercourse[3] and a 76-percent reduction in unprotected receptive anal intercourse[4] was recorded from 1985 to 1987 (68). Lesser degrees of behavioral change, however, have been recorded in areas of intermediate prevalence. For example, there was only a 28-percent decline in unprotected receptive anal intercourse among participants of a multicenter study (Baltimore, Chicago, Pittsburgh, and Los Angeles) from 1984 to 1986-1987, with 48 percent of the men still engaged in this practice at last assessment (in April 1986 to March 1987) (78). In January of 1986 and 1987, only 19 percent and 8 percent respectively, of men participating in the San Francisco Men's Study reported unprotected receptive anal intercourse (68). A particularly disturbing finding from a study of men in Pittsburgh is that although 91 percent identified receptive anal intercourse as the highest risk sexual activity for AIDS transmission and 90 percent endorsed the belief that condoms can reduce the spread of AIDS, 65 percent reported at least one episode of anal intercourse during a six-month period in 1986, and 62 percent of these men reported that they "never" or "hardly ever" used condoms during anal intercourse. Reasons for not using condoms included: condoms are used only by straights (26 percent); condoms are not readily available (22 percent); condoms spoil sex (22 percent); purchasing condoms is embarrassing (18 percent); and using condoms turns partners off (16 percent) (202).

The combination of alcohol or other drugs with sexual activity has been associated with high-risk sex (166). In a telephone survey of homosexual men in San Francisco, those who continued to practice unsafe sex were more likely to combine drugs and/or alcohol with sexual activity. Furthermore, men who combined drugs and/or alcohol with sex were the least likely to have changed the frequency of engaging in unsafe anal intercourse since 1984 (39). In another study, the combination of drugs and sexual activity was found to be the most significant contributor to unsafe sex among a group of New York City homosexual men (more important than perceptions of emotional support and of difficulty in modifying sexual behavior) (164). The National Institute on Alcohol Abuse and Alcoholism (NIAAA) is funding research on alcohol's effect on high risk-behavior among groups at high risk for AIDS (see appendix B).

Homosexual men reporting increases in unsafe sexual practices (i.e., anonymous sexual encounters) appear to hold different beliefs about AIDS than those adopting safer sex. In one longitudinal study in which changes in beliefs and sexual practices were monitored, men reporting increases in unsafe sex were more likely to say that they perceived themselves to be at high AIDS risk than men not engaging in unsafe sex. Men that reported risk reduction were more likely to hold the perception that one's peers were reducing risk, and the belief that one is capable of

3 The proportion of men engaged in unprotected anal insertive intercourse fell from 37.4 percent in January 1985 to 3.0 percent in January 1987.
4 The proportion of men engaged in unprotected anal receptive intercourse fell from 33.9 percent in January 1985 to 8.3 percent in January 1987.

making necessary behavioral changes to reduce risk and/or improve health. Those reporting that their perception of risk for AIDS increased with time did not reduce risky behaviors but did demonstrate a wide variety of psychological impairments. This seems to indicate that using techniques to increase the perception of risk for AIDS may not necessarily have the desired effect on sexual behavior (104,105). However, it is difficult to establish the temporal association between reported beliefs and behaviors (which came first, the belief or the behavior?) and whether the relationship is causal (i.e., did the change in belief lead to the change in behavior?). Furthermore, these relationships between certain beliefs and risk behavior should not be regarded as static. As the AIDS epidemic progresses, different beliefs can be anticipated to emerge as correlates of risky behavior (37).

Effectiveness of Specific Interventions

Evidence suggests that during the initial period of the epidemic, dissemination of AIDS health information was relatively important, but that later, the acceptance of new behaviors in one's peer network became more important (105). A number of techniques have been employed to change individual risk behavior and community norms. In this section, these programs and their effectiveness are examined.

Community-Based AIDS Risk Reduction Programs

Community-based approaches are aimed at simultaneously providing individuals with information and skills for behavior change and creating a social environment that supports behaviors that prevent the spread of AIDS. Behavioral theory suggests that when specific health-related behaviors become less socially acceptable in a community (and others are sanctioned to take their place), and when perceived social sanctions regarding unhealthy behaviors are persistent and inescapable, individuals are much more likely to both initiate and maintain healthful behaviors (37).

The dramatic behavioral change documented in San Francisco has in part been attributed to a shift in community norms resulting from the adoption of a multifaceted, community-based approach (sometimes referred to as the San Francisco model). At least six elements characterize this model: 1) strong leadership from within the homosexual community; 2) market research techniques to identify appropriate messages and communication channels for reaching the target audience; 3) programs to inform and motivate target audiences; 4) a focus on facilitating social and cultural change; 5) reliance on multiple channels of communication including print, broadcast, and face-to-face channels of communication; and 6) broad-scale, grassroots participation. In addition, research was conducted documenting baseline levels of high-risk behavior, changes over time, and the factors related to failure to change (37).

Although many programs have been implemented in San Francisco, few of them have been formally evaluated. Consequently, it is not clear what the relative contribution of the various elements of the San Francisco model have been in changing risk behaviors. Moreover, although community surveys have been undertaken and have documented improvements in AIDS-related knowledge and changes in behaviors, these changes cannot be directly linked to any particular component of the San Francisco model.

The Centers for Disease Control (CDC) is funding AIDS Community Demonstration Projects in six locations across the country (Denver, Seattle-King County, Dallas County, Denver City and County, New York State and City, Long Beach, Chicago) (see project descriptions in appendix B). Although the range of activities employed differs from site to site, the interventions include public health communications to provide factual information about HIV infection and to create the impression that prevailing social norms support changes to lower risk behaviors. The in-

terventions also include antibody testing to provide a cue to change behavior. Finally, the interventions include a variety of methods targeted to individuals resistant to change, individuals requiring additional help or skills to make changes, or individuals who have trouble maintaining the changed behaviors they have adopted. Evaluations of these programs are underway (see appendix B).

Members of risk groups targeted by community-based educational campaigns have reported that they are effective. A campaign to promote safer sexual practices among Montreal's homosexual population included AIDS education activities and condom distribution. In a survey completed one month following the campaign, three-quarters of respondents indicated that the campaign had influenced their behavior; however, 36 percent and 18 percent reported still engaging in active and passive anal intercourse without a condom, respectively (1). There may have been a tendency for some survey respondents to provide socially acceptable responses to the survey.

HIV Antibody Testing

Proponents of antibody testing claim that testing will motivate reductions in high-risk behavior. Opponents have claimed that the risks of discrimination or psychological distress outweigh the benefits of testing and that high-risk persons are motivated to reduce risk of infection without testing.

Several studies have shown that testing appears to considerably reduce levels of high-risk behavior. For example, in a study of over 1,000 homosexual men from the Baltimore/Washington D.C. area, 67 percent elected to learn their HIV antibody status. Those aware of their HIV seropositive status[5] decreased unprotected insertive intercourse to 42 percent of baseline levels (compared to 59 percent for seronegatives and 52 percent for the uninformed group).[6] A study of the effects of HIV antibody testing on subsequent sexual behavior among 270 homosexual men in Boston showed that levels of all sexual activities (except the number of steady partners) declined over a one-year period for all men irrespective of awareness of antibody status. Elimination of unprotected active anal intercourse was reported somewhat more often among seropositive men who became aware of their test result and discontinuation of unprotected receptive anal intercourse was reported slightly more often by men who became aware of a negative test result (133). Other studies have also shown significant differences in behavioral change between those informed and not informed of their HIV antibody status (216). In these observational studies, however, subjects chose to be tested and chose whether or not to be informed of their HIV antibody test results. There is some evidence to suggest that men already predisposed to risk-reducing behavior are more likely to choose to know their test result (133).

Not all studies, however, report a positive effect of HIV antibody notification on behavior. In a study of 74 homosexual men in Chicago that had learned of their antibody status, those who were positive and received their results increased receptive anal contact as compared to those who were positive and did not receive their results. In addition, some informed HIV-positive individuals manifested increased mental health problems (104,133). Some researchers have suggested that HIV antibody negative men increase risky activity due to the belief that they are somehow invulnerable to the effects of HIV (128).

5 The term HIV seropositive status refers to the interpretation of enzyme immunoassay and confirmatory tests (e.g., Western blot or immunofluorescence assay) as positive for HIV antibodies. Seronegative status refers to the interpretation of enzyme immunoassay tests as negative (186a).

6 Because those finding out that they are seropositive are more likely to have been more sexually active and to have engaged in high-risk sex at baseline than those finding out that they are seronegative, the results of these analyses are presented in terms of percent change at follow-up from baseline in the number of persons with whom an individual engaged in unprotected anal intercourse.

Partner Notification

Notifying the sexual partners or needle sharing contacts of those found to be HIV positive may inform a group of individuals that are unaware of their risk of HIV infection. The intention of partner notification is to provide education and counseling to the infected and susceptible contacts and thereby prevent further transmission. Sexual partner notification has been implemented successfully for STDs other than AIDS. Although partner notification would be very difficult when individuals have had large numbers of sexual partners (whose names or addresses might not even be known), it may be especially useful for high-risk seropositive individuals with few contacts in areas of low prevalence of infection.

Different models of partner notification have been adopted. In some States the names of those with HIV positive test results are reported to the State health officials who in turn identify, trace, notify, and counsel named contacts (e.g., Colorado). In other States, health officials selectively follow up contacts who fall into certain groups (e.g., women of child-bearing age, bisexual contacts) (97). Sometimes, the HIV-infected individual has the responsibility of notifying contacts himself and health officials only contact partners if they are asked for assistance. For partner notification programs to be successful, confidentiality of information must be assured. Without assurances of confidentiality, high-risk individuals may avoid testing or fail to report or refer at-risk contacts (106).

A partner notification program instituted by the Colorado Department of Health identified 42 HIV positive individuals from a total of 453 partners reported by 265 HIV-positive individuals. These 42 identified cases had not previously been tested or had been previously tested and found to be negative (37). No behavioral followup was conducted on these or the negative contacts identified through this program.

Face-to-Face Programs

The results of evaluations of two interventions suggest that face-to-face programs with multiple sessions can reduce high-risk behavior. Men with a history of frequent high-risk behavior reported fewer episodes of unprotected anal intercourse following participation in 12 weekly, group sessions covering AIDS risk education, cognitive behavioral self-management training to refuse coercions, and discussions regarding the development of steady and self-affirming social supports than men in a control group (men randomly assigned to a program waiting list)[7] (108). Other researchers employed an 8-week stress management program and a retreat emphasizing meditation, relaxation, positive health habits, and coping with stress for a group of seropositive men. Again, following the intervention, participants reported fewer partners in the previous month than men in the control group[8] (36).

The STOP AIDS Project, a face-to-face program implemented in San Francisco, although not formally evaluated, was successful in reaching large numbers of homosexual men. The project uses a focus group model to bring people together to engender a personal commitment to safer sex and personal participation toward ending the AIDS epidemic. In a survey of San Francisco homosexual men, over half of the men had heard of the project and 20 percent had attended a meeting. Records show that over 7,000 men have attended a meeting (37). There are no data available, however, regarding the specific impact of the program on behavior.

Conclusions

There have been few formal evaluations of the effectiveness of educational interventions to reduce the risk of HIV transmission

7 Program participants reported an average of 0.2 vs. 1.2 episodes of unprotected anal intercourse reported by controls in the previous month.

8 Participants reported an average of 0.5 vs. 1.09 partners reported by controls in the previous month.

among homosexual and bisexual men. Evaluations are needed to determine which approaches are effective for homosexual men in general and for men who are resistant to change. Considerable behavioral change has occurred in areas of highest HIV prevalence (e.g., San Francisco); however, a small minority[9] of men continue to engage in high-risk behaviors there, despite the conduct of a variety of educational interventions.

Analyses of the distinctions between those homosexual men who continue to maintain adopted behavioral changes over time and those who do not will be central to the design of new preventive interventions. Based upon what is currently known regarding the correlates of risky behavior, more work is merited on understanding how high-risk sex is associated with concurrent alcohol and other drug use, beliefs regarding AIDS risk, sexual impulse, and perceptions of personal efficacy and social norms. In addition, research on the social and environmental contexts under which homosexual men do not comply with safer sex can be expected to identify heretofore unsuspected correlates of high-risk behavior.

Specific approaches that could be implemented and formally evaluated include community intervention approaches and face-to-face, multisession programs targeted to those having difficulty adopting or maintaining safer-sexual practices. Although the community-based intervention model implemented in San Francisco may have shifted community norms and contributed to behavioral change, the model needs to be replicated and evaluated in middle and high prevalence cities. The extent of behavioral change in the San Francisco area, in part, may be attributable to the unique characteristics of the population there. Homosexual males in San Francisco, many of them migrants from other areas, tend to be well-educated, professionals, who identify with the homosexual community. In other areas, community leadership and community networks may be less well defined and the community-based approach more difficult to implement. Beyond providing education and social support, programs could provide the means with which behavioral change can be implemented. For example, methods of making condoms more available to risk groups and evaluations of the efficacy of these programs could be undertaken.

Data Collection and Evaluation

In order to gauge the effectiveness of educational interventions, information on baseline and current behavior of high-risk groups is necessary. Data on prevalent homosexual practices are available from only a few cities.[10] Many cities in the middle-to-high ranges of AIDS prevalence could benefit enormously from better estimates of sexual behavior among homosexual and bisexual men. Such data were collected in San Francisco and used to design educational campaigns, to determine the effectiveness of the programs, and to identify pockets of individuals who were not responding to them (37).

Uniform reporting of data would facilitate comparison of outcomes from different areas. At present, longitudinal studies of AIDS-related behaviors may use different periods of followup (i.e., periods of 1, 3, 4, 6, and 12 months). Furthermore, researchers vary in the detail with which they gather and report behavior. At a minimum, it would be useful for each study to record the frequency of specific sexual activities that are known to be high risk, and to report both mean frequencies (along with standard deviations) and percentages of individuals engaging in these activities at baseline and at followup (37). As a subject's risk of HIV infection varies by many characteristics of the contact (i.e., the HIV serologic status of the subject and partner, the type of sexual contact, whether the subject assumed an active or passive role, and

9 An estimated 3 percent of men in the San Francisco Men's Health Study continued to practice unprotected active intercourse and 8 percent practiced unprotected receptive intercourse as of January 1987 (68).

10 Cities for which data on prevalent homosexual practices are available include San Francisco, Los Angeles, Chicago, Baltimore, Pittsburgh, and New York (37).

condom use), contact-specific, rather than summary reports of risk behavior may be necessary. For example, when high-risk sexual practices are reported, it is important to document the extent to which HIV negative individuals might be selecting only other HIV negative individuals for sexual relations and likewise, HIV positive individuals may be limiting their partners to those that are HIV positive.[11,12] To understand why condoms are not used during high-risk sexual encounters, it is important to document whether the study subject is himself non-compliant or whether the subject's sexual partner is non-compliant. The types of interventions needed to encourage condom use would differ in the two situations (i.e., motivating the subject to use condoms versus motivating the subject to insist that his partner use condoms). The CDC is developing a uniform data collection format that is to be used by State-funded programs by the end of 1988 (21).

Specific Groups Needing Special Research Attention

Black and Hispanic Homosexual and Bisexual Men.--About half (48 percent) of black or Hispanic adults and adolescents with AIDS are homosexual males (7 percent of these homosexual males are also IV drug users). Of all those at risk for AIDS, black and Hispanic homosexual males may be the least studied. The limited data that are available suggest that race and ethnicity are not significantly related to participation in high-risk sex (37,39,63). Blacks however, appear to be at greater risk for seroconversion than whites (158,159). More research is needed to explain the higher rates of seropositivity among blacks.

Black homosexual males may be less informed about the AIDS epidemic than their white counterparts. In one community survey in Detroit, only 13 percent of 62 black homosexual respondents correctly identified that the AIDS virus was transmitted through blood and semen, and only 19 percent were very worried that they might get AIDS (37 percent reported they were not worried about possible infection) (215). Given a relative lack of data regarding minority group members' AIDS-related knowledge, attitudes, and sexual practices, there are few clues about how targeted prevention strategies aimed at alerting minority men to the dangers of certain behaviors might be developed. Furthermore, minority group members' response to available educational interventions has not been adequately monitored.

Individuals with Low Incomes and Low Educational Attainment.--Studies of homosexual and bisexual men have generally included those individuals most likely to respond to educational programs: individuals with moderate to high incomes with college education. Numerous studies have determined that response to knowledge of health risk are correlated with these two variables. Data are needed on the prevalence of high-risk behaviors among members of other socioeconomic strata, so that the appropriateness of current programs for these individuals can be assessed.

Homosexual Adolescents.--Little attention is being given to the problems of homosexual adolescents. There are no specific data on the prevalence of HIV infection among homosexual youth. A study of homosexual/bisexual male teens found that they had an average of 7 sex partners annually, with 45 percent reporting a past history of sexually transmitted diseases. Adolescents who are not yet infected with HIV and who are newly exploring their homosexual lifestyles are among those most likely to benefit from preventive efforts (154).

Bisexuals.--Specific data regarding the prevalence of male bisexuality in the population, the prevalence of HIV infection among male bisexuals, the degree to which this group has been influenced by AIDS risk reduction education, and the potential for

11 Although it is inadvisable for HIV positive individuals to have unprotected anal intercourse, those limiting their sexual partners to individuals who are also HIV positive will not infect previously uninfected individuals.

12 The MACS study investigators began to record this information, when available, in 1987 (150).

spread of infection to heterosexuals by bisexuals do not yet exist.

IV DRUG USE

Introduction

Intravenous drug users are the second largest group of persons who have developed AIDS in the United States. As of May 2, 1988, the CDC reported 11,045 cases attributed to IV drug use, representing 18 percent of all adult/adolescent AIDS cases. Of these, 80 percent are black or Hispanic (192). An additional 7 percent of adult/adolescent AIDS cases occur among homosexual/bisexual males who also report IV drug use. The prevalence of HIV infection among IV drug users varies by geographic area; rates range from 50 to 60 percent in the New York City area to below 5 percent in most areas of the country other than the East Coast (185).[13] The potential for further spread of HIV to IV drug users, their sexual partners, and offspring is great. There are an estimated 1.1 million IV drug users in the United States (185), many of them concentrated in large, economically depressed urban areas. The great majority--approximately three-quarters--of IV drug users are male. Most have their primary sexual relationships with women who do not inject drugs. The number of females who do not inject drugs but who are regular sexual partners of male IV drug users is at least half as large as the number of IV drug users (59) or about 550,000.

Most IV drug users use heroin, but a substantial number also inject other drugs, such as cocaine. Stopping drug use or adopting safer drug injection practices will reduce the risk of HIV infection for IV drug users. If IV drug users adopt safer sex practices, transmission of the virus from IV drug users to others will be reduced.

Sharing HIV-contaminated needles, syringes, and other drug injection equipment is the source of infection for most HIV-infected IV drug users. Prior to AIDS, needle-sharing occurred as part of initiation into IV drug use and as a symbol of positive social relationships among some IV drug users. Furthermore, in many areas drug injection equipment is difficult to obtain[14] and illegal to possess. As a result, drug users are disinclined to carry injection equipment with them; they tend to obtain drugs first and then worry about obtaining the injection equipment (56).

In cities with large numbers of IV drug users, there are "shooting galleries," where a semi-private space and injection equipment may be available for a fee. A single needle and syringe can often be used by many drug users before the needle becomes too worn for further use. In one survey of IV drug users in treatment (conducted over a 19-month period between 1983-1985), 68 percent (131/193) reported engaging in needle-sharing, and they did so during 40 percent of their drug-use episodes (17). The use of shooting galleries has been linked to HIV exposure in several studies of IV drug users (126,161).

Complex interactions exist among drug use, functional status, and sexual activity. Heavily addicted drug users, often physically debilitated, may experience a loss of libido and tend not to be sexually active. For the majority of IV drug users not so heavily addicted, drug use may enhance sexual pleasure and contribute to considerable sexual activity outside of committed relationships (56). Drug use may also lead to a disinhibition effect against safer sex practices. Most IV drug users develop relatively stable relationships with a single partner. In one New York City study, over 90 percent of IV drug users entering treatment reported that they had a

13 These estimates are based on blood tests performed at IV drug treatment programs. At any one time only about 15 percent of IV drug users are undergoing drug treatment. Habitual users not in treatment may be at even higher risk. In contrast, the estimated 200,000 intermittent users may be at lower risk (185).

14 Most States with large numbers of IV drug users require prescriptions for needle and syringe purchase (56).

stable sexual relationship, and the average duration of their relationship was over 5 years (59). The two partners often do not live together, and mutual monogamy is rare. In many cases there is no use of contraception, and the relationships frequently involve children. In one study, IV drug users in treatment reported an average of 2 children (54).

Goals of AIDS Education

Reaching IV drug users with information about AIDS is, in itself, a challenge. Most educational programs have utilized ex-addict outreach workers to provide information relevant to IV drug users in their own communities. Program success appears to depend on imparting new information, providing the means for behavior change, and reinforcing changes in AIDS-risk behavior (56). The establishment of new norms within the drug use community is a desired outcome of AIDS educational efforts. These norms include cessation or reduction of drug injection and if injection continues, using sterile injection equipment and eliminating or reducing the number of persons with whom equipment is shared. To reduce transmission of the HIV virus from the IV drug user to his or her sexual partner, adherence to safer sex practices is required.

AIDS education efforts will not necessarily lead all IV drug users to seek treatment, not all of those who seek treatment will be admitted, and treatment will not immediately be effective for all of those who do enter it. Therefore, AIDS education efforts for IV drug users promote means for "safer" drug injection. Promotional methods include teaching social skills and strategies for refusing to share equipment when injecting, providing information on how to sterilize previously used injection equipment, providing bleach or alcohol for de-contaminating used equipment, and actually providing sterile equipment for injecting drugs. The ready accessibility of means for safer injection, especially when an IV drug user is entering withdrawal, may be the critical factor in the effectiveness of an educational program. Similarly, condoms provide a means to practice safer sex and can be made easily available through AIDS outreach workers and drug abuse treatment programs.

Effectiveness of Specific Educational Interventions

Substantial knowledge gains and behavioral change occurred within the IV drug use community prior to the implementation of official AIDS education programs. In New York City, for example, many IV drug users not in treatment knew that AIDS was associated with injection of drugs as early as the fall of 1983 (58). They had learned about AIDS from the mass media and from the oral communication networks within the drug use subculture. By 1984, more than half of a group of 59 methadone patients in New York City reported that they had made some change in their injection behavior; they usually reported increasing their use of sterile needles, cleaning their needles more frequently, and reducing the number of persons with whom they would share drug injection equipment. Only 14 percent, however, reported having changed their sexual behavior (82). A later study of IV drug users not in treatment in New York found 41 percent reporting changes in injection behavior compared to 31 percent reporting sexual behavior changes (115).

Knowledge about AIDS, by itself, does not appear to motivate IV drug users to change AIDS-risk behaviors. In one study, the majority of IV drug users were sharing equipment even though over 90 percent of them knew that HIV transmission could occur through sharing equipment (76). Similarly, in a very well-designed study of the effectiveness of an educational program using outreach workers, changes in knowledge were not accompanied by behavioral change (131). This has been attributed to the lack of attention to providing the means of behavioral change; the outreach workers did not distribute bleach or clean equipment and did not

provide access to drug treatment programs (56). The lesson is clear--to facilitate behavioral change, knowledge does not appear to be sufficient. It is likely that the means for implementing changes must also be addressed within the context of the AIDS educational effort. (See table 2-1 for a description of selected interventions and results of program evaluations.)

That is not to say that providing the means for change is sufficient. Providing information relevant to the concerns and misapprehensions of IV drug users must be emphasized. For example, many IV drug users mistakenly believe that as long as they are not sharing drug injection equipment with people who "look sick," they are protecting themselves against AIDS. Consequently, communicating information concerning the long-term asymptomatic carrier status is needed. The likelihood of developing AIDS after exposure to HIV needs to be emphasized. If an IV drug user believes that there is a very low likelihood of developing AIDS after HIV exposure, then motivation to change behavior is not likely to be very strong. Conversely, the belief that all persons exposed to HIV will develop AIDS or the belief that exposure to HIV is the same as having AIDS may create such anxiety that risk reduction efforts will be undermined. Given the exigencies of daily life for an IV drug user, it is unlikely that new risk reduction behavior can always be maintained. Thus, IV drug users must also realize that the occasional slip in risk reduction behavior does not negate the need for continuing risk reduction (56).

Drug Treatment

The IV drug users' most effective method of avoiding AIDS is to stop injecting drugs. For most, this will require formal treatment. Entry into treatment is often associated with immediate reductions in IV drug use, but a single episode of treatment is not likely, by itself, to lead to permanent cessation of drug use. Length of time in treatment is associated with significant reductions in drug use that are maintained over a long period of time. The lack of availability of suitable drug abuse treatment is a recognized problem. In New York City, approximately 3,000 new permanent treatment positions have been added to the drug abuse treatment system. All of these have been filled, and there continues to be a waiting list of approximately 1,000 persons. Current plans call for an additional 5,000 treatment positions to be opened by mid-1989 (56). The Presidential Commission on the Human Immunodeficiency Virus Epidemic has recommended expanding the capacity and improving the quality of IV drug treatment programs (211).

Increasing the availability and accessibility of drug treatment for IV drug users through AIDS outreach programs appears to be effective. A treatment voucher program developed by the New Jersey State drug abuse agency has proven to be effective in extending treatment services to those concerned about the risk of AIDS and in bringing into treatment young black males, a group previously underrepresented in the State treatment system.[15] Over 80 percent of the first 1,000 vouchers distributed by AIDS outreach workers were redeemed for a free episode of detoxification treatment. Over a quarter of those entering treatment through the voucher program went on to longer-term treatment (99). As length of time in treatment is associated with greater reductions in drug injection, this program has probably had a long-term effect on drug injection behavior (56). Surveys of those entering treatment indicate that about half are largely motivated by the threat of AIDS (81).

Bleach Distribution

In some areas, outreach workers, in addition to providing education, are distributing small bottles of bleach that can be used to sterilize drug injection equipment.[16] From 1986 to 1987, outreach workers in San Francisco distributed 15,000 vials of bleach, most

15 Imposition of patient fees in 1981 resulted in a loss of black males in treatment (99).
16 Household bleach rapidly inactivates HIV outside of the body (155).

of them to addicts not in treatment. Although the proportion of addicts (in treatment) reporting needle-sharing remained the same (71 percent), needle-sharers reporting "usually" or "always" using bleach went from 6 percent before (in 1985) to 47 percent after (in 1987) the bleach distribution program began. During this period, the proportion never using bleach fell from 76 percent to 36 percent. Despite the apparent success of this community-based outreach program, serological studies showed that the prevalence of HIV positivity among respondents rose from 10 to 15 percent. Consequently, although sterilization is recognized as an important component of AIDS prevention, the researchers recommend other risk-modification measures be evaluated, including more widespread availability of sterile hypodermic needles (31). During the same period, others have found somewhat higher levels of bleach use among San Francisco IV drug users not in treatment (212). Bleach use may be higher among those not in treatment because the bleach distribution program was targeted to those not in treatment. Evaluations of the effectiveness of street outreach efforts in New York City that include the distribution of sterilization agents are in progress (56).

Needle-Exchange Programs

Official needle-exchange programs for IV drug users have not yet been established in the United States. Prior to the onset of the AIDS epidemic, IV drug users in Amsterdam worked with public health officials to set up a needle-exchange system in which drug users could return used injection equipment and exchange it for new equipment without cost. This effort was initiated to reduce the spread of hepatitis B within the IV drug use community. The needle-exchange system operated on a small scale and did not substantially reduce the spread of hepatitis B among IV drug users (26). Concern about AIDS, however, has led to a greater demand for sterile equipment and an expansion of the needle-exchange system. The proportion of IV drug users using the exchange system has increased from less than 10 percent to almost 50 percent (203). The needle-exchange system did not lead to an increase in drug injection. In fact, evidence suggests that since the implementation of the needle-exchange program, IV drug users in Amsterdam have decreased their frequency of injection; the proportion injecting more than once per day dropped from almost 90 percent to less than 50 percent. This decline in drug injection is attributed to attempts by IV drug users to prevent HIV infection. There are no data to show that the needle-exchange program has reduced the transmission of HIV.

HIV Antibody Counseling and Testing

Some uncertainty exists regarding the impact of IV drug users' learning their HIV antibody status. In some areas, IV drug users who learned their positive antibody status have shown greater risk reduction than those testing negative (29,42). Risk reduction included reducing or eliminating drug injection or, among those continuing to inject, reducing or eliminating equipment sharing. Adherence to safer sexual practices also increased. In some cases, however, attempts at changing sexual practices after learning of positive HIV antibody test results led to the break-up of some long-term relationships (29). Seropositive individuals suffered distress, social isolation, and stigmatization upon learning of their HIV test results, but distress declined over a period of several weeks.

It is unclear whether learning individual test results, per se, led to the observed behavior change. A comparison group of untested individuals from the same drug abuse treatment program showed comparable risk reduction to those who were tested (29). Thus, it may be that increased awareness and personal concern about AIDS among IV drug users in the local area stems from knowing that personal risk information is available and knowing persons who test positive rather than from individuals' learning their own antibody status (56).

Some have advocated antibody testing for IV drug users for cities in which HIV seroprevalence among IV drug users is low (31). In San Francisco, for example,

voluntary antibody testing has been made widely available. A concerted effort is made to provide medical care to seropositive individuals, to place them in treatment, and to counsel them intensively regarding equipment sharing and safer sexual practices. This strategy is based on the traditional public health approach of locating infectious persons and then intervening to prevent transmission from those persons to others. In San Francisco, where this strategy has been implemented, an estimated one-third of IV heroin users have been tested in the first two years of the program. There are no available data on how HIV antibody testing in San Francisco has affected IV drug users' risk behaviors.

Preliminary data from one area[17] where this strategy was implemented suggest that education contributes more to changing drug use behavior than knowledge of ones' HIV antibody testing results. An investigator compared the risk behaviors of three matched[18] groups of 25 IV drug users in treatment and provided with AIDS education; those who had been tested and learned that they were HIV antibody positive, those had been tested and learned they were HIV negative, and those who had elected not to be tested. After three months of followup, 18 of aware seropositive IV drug users returned to drug use despite the opportunity to receive methadone maintenance, long-term counseling, and medical followup. Ten of these HIV seropositive IV drug users, however, returned to treatment by nine to 12 months of followup and by this time, positive changes in drug use behaviors had been adopted by all three groups. Evaluations of innovative models aimed at changing the risk behaviors of those identified as seropositive are needed (124,125). The National Institute on Drug Abuse is funding AIDS Comprehensive Community Outreach Demonstration Projects that include evaluations of HIV antibody testing programs (see appendix B).

Changes in Sexual Behavior

There have not been substantial changes in sexual behavior among IV drug users, especially with sexual partners with whom the IV drug user has a long-term relationship. In studies where both drug and sex behaviors were monitored, changes in sexual behavior lag behind changes in drug-use behaviors. For example, in San Francisco, while reported use of bleach to sterilize drug injection equipment rose from 3 to 67 percent before and after a community-based outreach program was implemented, reported "safer sex" practices increased only slightly, from 5 percent to 15 percent (212).

Drug users have reported reductions in their number of casual sexual partners and increased use of condoms with casual partners. Male IV drug users have also reported changes in their use of prostitutes. They are more likely to use condoms when with a prostitute, more likely to select a "regular" prostitute rather than seeing many different prostitutes, and more likely to insist that the prostitute they use "look clean" and in apparent good health (56). The least amount of AIDS-related behavioral change has occurred within long-term, committed relationships. This may be explained by the threat to the relationship that behavioral change may pose. In a study of antibody testing, in which HIV seropositive individuals were strongly counseled to use condoms, about half of the long-term relationships dissolved after the IV drug users introduced condom use into the relationship (29). New counseling approaches appear to be needed to assist IV drug users in initiating and maintaining safer sexual practices within their long-term relationships. It is within the long-term relationship that transmission of HIV is most likely to occur, to both the sexual partner and to children likely to be conceived because of a lack of contraception.

17 The experience of a small-sized city in a non-metropolitan area in New England is reported (124).
18 IV drug users were matched by age, sex, and drug use (124).

Preliminary data from one investigator suggest that providing one-on-one counseling to seropositive IV drug users and their primary sexual partner is effective. Marlink reports that seropositive IV drug users in treatment significantly increased their reports of "always" using condoms after participating in one-on-one counseling with their sexual partner. A comparison group of IV drug users in treatment who were either HIV antibody negative, or who had elected not to be tested, did not increase reports of "always" using condoms. Because IV drug users in the comparison groups did not have partner counseling, it is not clear what the relative contributions were of the counseling intervention and knowledge of HIV antibody status (125).

Conclusions

Evidence suggests that IV drug users have changed their behavior to reduce their chances of developing AIDS. Behavioral change depends upon learning that they are at risk for AIDS and the ways the disease is transmitted. Risk reduction also depends upon the availability of means for behavior change. Means may include drug abuse treatment and equipment sterilization methods or clean injection equipment. Behavioral theory suggests that sustaining behavioral change requires reinforcement through a belief system that the new behavior is effective in preventing AIDS and through social approval from peers (56).

No single intervention appears to have maximal effectiveness, even within a single geographic area. Instead, most programs have relied on multiple approaches. Reinforcement of risk reduction is needed for a successful AIDS education program. Here, peer approval of behavioral change may play an important role. The decision to engage in AIDS risk reduction is sometimes made within a group context rather than by IV drug users individually. In one study, whether or not friends were practicing AIDS risk reduction was the strongest predictor of behavioral change (82). This finding is not surprising in light of the importance of peer approval in IV drug use initiation, injection equipment sharing, and drug abuse treatment programs.

To evaluate the effectiveness of interventions in terms of reduced HIV infection, cohort and ongoing seroprevalence surveys will be needed. To supplement these studies, continued ethnographic research is required to monitor behavioral responses to interventions. Ethnographic research (observations of a group's beliefs and practices by trained observers) has yielded invaluable insight into drug use behaviors and patterns of social and sexual relationships that suggest new approaches to educational intervention. For example, the evident importance of peer group approval suggests that interventions aimed at a group of IV drug users rather than at individuals might be effective. Similarly, the lack of significant change in sexual practices among IV drug users and their long-term partners suggests a need for involving sexual partners in counseling. Once promising interventions have been identified for implementation, rigorous methods (e.g., experimental or quasi-experimental designs) need to be employed to evaluate their success.

The threat of AIDS appears to have motivated many IV drug users to seek treatment. Research is needed to determine the long-term effectiveness of treatment programs for the increasing number of IV drug users entering them. In addition, as some IV drug users are at risk of AIDS because they inject drugs other than heroin, types of treatment that may eliminate or reduce their habits are needed.[19]

When drug abuse treatment is not effectively utilized, methods of safer injection need to be adopted to reduce AIDS risk. Both distribution of sterilization agents and needle-exchange programs have been implemented in different areas. It appears that both approaches have been accepted by more

19 Most IV drug users in treatment programs are heroin users for whom methadone is effective in curbing the incentive to use heroin.

than half of IV drug users in the affected areas. HIV transmission continues to occur, however, in areas where outreach workers have effectively distributed bleach. Although needle-exchange programs remain controversial in the United States, their comparative worth or the effectiveness of using both interventions simultaneously could be evaluated.

For areas where there are few infected IV drug users, the strategy of making voluntary HIV antibody testing easily accessible and providing intensive followup for those identified as positive needs to be evaluated further. Preliminary data from one study of this approach suggest that providing education to IV drug users in treatment alters risky drug taking practices irrespective of HIV antibody status. More information on the social consequences of being identified as seropositive and its effects on behavioral recidivism is needed, especially in light of evidence that IV drug users in treatment may return to drug use soon after learning of their HIV infection (124). Furthermore, evaluations are needed of innovative approaches to providing education and counseling to participants of voluntary HIV antibody testing in areas of both low and high HIV prevalence.

Particular attention needs to be paid to educational interventions aimed at changing the sexual behaviors of IV drug users. Although some changes have occurred, they are modest in comparison to changes in IV drug-related behaviors. Of special concern is the observation that changes in sexual behavior have been less frequent within committed relationships than within casual sexual relationships. Without changes in condom use and use of other forms of contraception, heterosexual partners will be infected and perinatal transmission may occur, since childbearing is more likely within longer-term relationships. Preliminary data from a study of one-on-one counseling of HIV seropositive IV drug users in treatment with their sexual partners suggest that this technique is very effective in promoting condom use (125). Further research in this area is needed.

IV drug use is associated with much of the AIDS transmission among blacks and Hispanics in the United States. Consequently, culturally sensitive educational approaches are needed for these groups. What is known regarding the geographic distribution of AIDS cases should help to target these efforts. For example, almost two-thirds of black (58 percent) and Hispanic (61 percent) adults who have AIDS live in three States--New York, New Jersey, and Florida. Among Hispanics affected by AIDS in the northeastern United States, 80 to 90 percent were born in Puerto Rico (94). There are few data regarding differential impact of interventions on specific racial/ethnic groups (83) or on specific age/drug use groups (e.g., young IV drug users with relatively new drug habits vs. older IV drug users with longer-term drug habits) (55).

CERTAIN PRACTICES OF HETEROSEXUAL ADULTS

Introduction

Heterosexually Transmitted AIDS Cases

There is controversy surrounding the degree of risk that the AIDS epidemic poses to the heterosexual community. There are few recent data regarding either the prevalence of high-risk, AIDS-related behaviors, or the extent of infection among heterosexuals. According to the CDC AIDS case surveillance data, 4 percent of AIDS cases reported to date (2,463 of 59,897 adult/adolescent cases as of May 2, 1988) represent those transmitted via heterosexual contact (192).[20] Although a small proportion of all cases, heterosexually transmitted cases represent the fastest growing segment of AIDS cases.

20 These include 1,003 persons without other identified risks who were born in countries in which heterosexual transmission is believed to play a major role.

The cumulative incidence[21] of AIDS cases in heterosexual adults and adolescents is highest (above 1 case per 10,000 population) in four States/areas: New York, New Jersey, the District of Columbia, and Florida (185). Most of the heterosexually transmitted cases in these areas arose as a consequence of sexual contact with infected IV drug users (56). There are a disproportionate number of minority group members represented among heterosexually transmitted AIDS cases--69 percent of cases occur among blacks and 14 percent among Hispanics.

The characteristics of AIDS cases do not necessarily give an accurate depiction of who is now at risk of developing AIDS. Because the period between infection and onset of symptoms of disease may be seven years or longer, the characteristics of AIDS cases are those of a group who engaged in high-risk behaviors several years ago. To understand the future spread of AIDS among heterosexuals, it is important to have information regarding HIV infection and on the occurrence of high-risk behaviors among a group of heterosexuals representative of the general population.

The Prevalence of HIV Infection

There are no data on the prevalence of infection among a group of heterosexuals that are similar to the general population of United States heterosexuals. Instead, seroprevalence data from testing programs within the military and blood donor programs are used to estimate infection rates within the low-risk heterosexual community (individuals at known risk of AIDS are asked not to donate blood), and data from voluntary HIV antibody testing programs and STD clinics have been used to estimate infection rates within high-risk heterosexual populations. In addition, newborn surveillance programs have served as indicators of infection among reproductive-age women. According to blood donor testing data, the prevalence of HIV infection for first-time donors is 4.3 per 10,000[22] (185). Infection rates among heterosexuals attending STD clinics and not admitting to AIDS risk behaviors[23] are as high as one percent (185). In Massachusetts, where blood from newborns was tested for HIV antibodies in 1986 and 1987, 2.1 per 1,000 mothers of neonates were determined to have been infected.[24] In inner-city hospitals, 8 per 1,000 women were infected (92).

To improve estimates of HIV infection within the general community, the CDC is conducting seroprevalence surveys in hospitals, family planning and STD clinics, drug treatment centers, and other sites located in both high- and low-risk areas (129).

The Prevalence of High-Risk Behaviors

There are very poor data available on the sexual behavior of the American population. The data on sexual behaviors collected by Kinsey in the 1940s are recognized as flawed because investigators did not use probability sampling, and because respondents were disproportionately drawn from the Midwest and college campuses (143). A national survey of American adult sexual behavior is being conducted[25] and information from a representative group of 20,000 adults should be available by mid-1989. Preliminary data on a sample of 2,000 adults should be available by fall 1988 (28). The results of a survey of sexual attitudes and behaviors of over 3,000 American men and women conducted for the Kinsey Institute in 1970 were never published and the survey data has only recently been made available to researchers (19).

21 The cumulative incidence of AIDS cases is the total number of reported AIDS cases in an area divided by the number of individuals in the area at the onset of the epidemic.

22 Data are based on HIV antibody tests performed on blood donations from 1985 to 1987.

23 Risk behaviors included homosexual contact, IV drug use, and known sexual contact with a person from these groups. When self-reported risk behaviors of HIV seropositive individuals attending STD clinics were confirmed with a reinterview after testing, HIV infection rates among those not admitting to risk behaviors ranged from 0 to 1.2 percent.

24 Antibodies in maternal blood are contained in neonatal blood specimens routinely collected for other purposes, such as screening for phenylketonuria (92).

25 The survey is being conducted by the National Opinion Research Center with support from the National Institute of Child Health and Development (NICHD), and the CDC, National Center for Health Statistics (28).

Some regional data have been collected regarding high-risk heterosexual behavior. For example, a survey was conducted in 1986 using a probability sample[26] to estimate the size, demographic composition, and sexual behavior of the multiple/high-risk partner heterosexual population[27] in San Francisco (38) . Results indicated that approximately 17 percent of San Francisco adult residents are heterosexuals with multiple or high-risk sex partners (58 percent of them men and 42 percent of them women).

Sexual practices, attitudes about risk of HIV infection, and sources of AIDS information reported by this group of "high-risk" heterosexuals, while limited to the unique population of San Francisco, offer some insight into what kind of educational programs targeted to this risk group might be effective. The survey revealed that although risk group members were very sexually active, with many reporting partners in AIDS risk groups, less than one-third reported feeling personally threatened by AIDS. Nevertheless, sizable numbers of heterosexuals at risk for AIDS reported that they had reduced their number of sex partners and decreased anal sex since the onset of the epidemic. High-risk heterosexuals are also at risk for AIDS because of IV drug use. At least eight percent of risk group members reported having used IV drugs, with two percent having done so in the six months immediately prior to the interview. In addition, alcohol and drug use prior to sexual encounters was associated with engaging in higher-risk sexual practices (38).

Overall, the importance of reducing the chances of contracting or spreading AIDS was rated highly, 8.4 on a 10-point scale. Few believed that "using a condom is a turn-off," and condom-resistant attitudes were held by one-quarter of respondents. Approximately three-quarters of respondents indicated they were familiar with the concept of safer sex. There was less awareness of safer sex among blacks and Hispanics, however. The level of enjoyment of unsafe practices was correlated with respondents' sexual behavior, which suggests that a communication strategy of emphasizing the pleasurability of safer sex may be an effective way to bring about behavioral change. Beliefs about social norms regarding specific sex practices were not strongly linked with sexual behavior (38).

Only 20 percent of risk group members reported seeking specific information on how to reduce their risk of getting AIDS. Most have relied on their physicians or friends as sources of information. There was considerable interest expressed in workplace-focused educational programs, particularly among less well-educated risk group members. Thirty-one percent said they would attend a risk-reduction presentation during lunchtime or after working hours at their place of employment. Twenty-six percent indicated they were likely to call a toll-free AIDS information hotline. Health professionals and the media were identified as preferred sources of information. Eighty-eight percent approved of the use of sexually explicit risk-reduction messages.

Although over two-thirds of respondents were aware that antibody screening was available, only 5 percent indicated that they had been tested. Only 22 percent stated that they were likely to use the test in the future. Relatively low levels of test use are explained by the perception that heterosexuals are not at risk for AIDS.

Although the findings of this survey conducted in 1986 may be dated, there are some important lessons to be learned regarding educational interventions targeted to high-risk heterosexuals.

- Educational interventions that increase the high-risk individual's perception of

26 Probability sampling is a technique that yields a study group that is representative of the area.

27 This population consisted of adults (aged 18 or older) reporting two or more sex partners of the opposite sex for the last year, or opposite sex partners whom they believed to be IV drug users. In addition, men were included if they had sexual contact with a female prostitute in the previous year and women were included if they had sexual contact with a male prostitute or bisexual male partner in the previous year.

risk may increase their solicitation of HIV information and use of the HIV antibody test.

- o There is considerable overlap in risk behaviors. Therefore, educational efforts may be effective if simultaneously directed at changing sex and drug use practices. Controlling alcohol and drug use may increase compliance with safer sex recommendations.
- o There is interest in AIDS educational efforts located at the worksite and at family planning and STD clinics. Hotlines were named as useful sources of AIDS information.
- o Educational approaches that emphasize pleasure associated with safer sex might be effective. Explicit risk reduction messages may be useful.

Because the high-risk heterosexuals surveyed were identified through a probability sample, investigators can generalize findings to the high-risk heterosexuals of San Francisco who are estimated to comprise 17 percent of the population. Given the unique characteristics of San Francisco, however, the findings may not be generalizable to other areas in the country. The results of a followup survey of high-risk heterosexuals conducted by the same group of investigators should be available in mid 1988 (145). With this survey, any temporal changes in sexual attitudes and behaviors will be documented, but only for San Francisco.

Effectiveness of Specific Educational Interventions

Persons attending STD clinics and sexually active women of childbearing age (i.e., those with multiple or at-risk partners, or with a history of drug use) are two groups of high-risk heterosexuals that have been identified for AIDS prevention activities (183). In this section, what is known about the effectiveness of education and counseling interventions relevant to adult members of these groups is reviewed. In the next section, the effectiveness of interventions targeted to adolescents is discussed.

Persons Who May Have Sexually Transmitted Diseases

Individuals infected with sexually transmitted diseases (STDs) other than AIDS are at increased risk of HIV infection by virtue of their sexual practices (e.g., multiple partners) and because open genital lesions present in some STDs facilitate HIV transmission (123). In light of the similarities in risk-reduction services related to STDs and HIV infection and the high-risk nature of the population served by public STD clinics,[28] CDC has targeted these sites for AIDS educational and testing activities. In fact, an estimated 42 percent of all HIV antibody testing and counseling centers are located in STD clinics (123).

Education provided at STD clinics can reach a large number of high-risk individuals; approximately half of all annually reported cases of STD are treated within the nearly 3,500 public STD clinics (123).[29] Of considerable concern are recent STD surveillance data indicating that the number of new STD cases is increasing. For example, through the first 46 weeks of 1987, there was a 32-percent increase in the number of cases of infectious syphilis reported as compared to the same period in 1986. A marked increase of syphilis was noted among inner-city, heterosexual, minority group members suggesting that high-risk sexual activity is increasing in these groups despite the risk of HIV infection (187).

To date, no specific AIDS education programs offered within STD clinics have been formally evaluated (123). The CDC's Division of STDs is providing funding to Innovative Projects for Risk Reduction, AIDS Prevention Projects to the States, and AIDS

28 Sociodemographic characteristics of public STD attendees are similar to those of heterosexually transmitted AIDS cases, both tend to be young, urban, heterosexual individuals from lower socio-economic groups (123).
29 These clinics manage approximately 5 million patient visits a year (123).

Community Demonstration Projects. Grant recipients are conducting program evaluations that should be completed in late 1988 or in 1989 (see appendix B).

Given the similarity in risk reduction messages imparted to prevent HIV infection and other STDs, it is instructive to look at evaluations of innovative educational approaches aimed at preventing STD infection. Pertinent to the conduct of AIDS education are those interventions that attempt to improve knowledge of STDs and their prevention, to change attitudes regarding prevention, to alter high-risk sexual practices, to improve return-to-clinic rates, and to improve client referral of potentially infected partners. Examples of educational approaches that have been evaluated include the use of printed educational materials, videotapes, programmed learning guides, in-depth face-to-face discussions, self-administered behavioral checklists, condom distribution, clinician-patient contracts, and patient referral cards (see table 2-2 for a description of, and results from, evaluations of STD clinic educational interventions). Several of the evaluation studies employed designs (e.g., randomized clinical trials) and included sufficient numbers of clinic patients to derive statistically meaningful results. Most studies, however, were conducted in the mid-to-late 1970s in unique localities, a factor limiting the generalizability of results.

To improve knowledge related to STDs, one group of investigators (7) evaluated the relative effectiveness of a programmed learning guide, an audiovisual technique, and a person-to-person interview. The three interventions accounted for a 20-percent increase on post-test knowledge scores, and the interview technique was the most effective.

Interventions aimed at changing attitudes have also been effective. In one study, men and women were urged to use condoms or to encourage their partners to do so through the use of videotapes, in-depth discussions, informational checklists, and free condom distribution (66). There were marked differences in attitudes compatible with prevention between those exposed to the interventions and the control group (71 percent of individuals in experimental groups demonstrated attitudes compatible with prevention compared with 33 percent of those in the control group). Unfortunately, there are no data in either this study or the former study regarding actual changes in behavior.

The results of two studies in which the effectiveness of an educational intervention was measured in terms of evidence of behavioral change are not encouraging. In one descriptive study (the behavior of a group of clinic attendees were described before and after the implementation of the educational intervention without the use of a comparison group), the acceptance of free condoms at the STD clinic did not reduce the number of returns to clinic with another STD as compared with those that did not accept the condoms (47). In another study, a group of men experiencing a gonnorhea reinfection (i.e., they did not comply with behavioral recommendations) were randomly assigned to a special counseling intervention or to a control group (171). The rate of gonorrhea reinfections among men in the special intervention group was the same as that observed in the control group.

In terms of motivating patients to return to the clinic for followup, one study showed that provider performance was very influential (118). In the study, the effect of new educational materials and the use of patient-clinician contracts outlining preventive patient behaviors were evaluated. Although rates of return improved for women (pre-intervention, 35 percent vs. post-intervention, 73 percent), the return rate for men was similar before and after (33 percent and 37 percent) the interventions were initiated. During a two week period, patient/clinician interactions were directly observed to see if the new educational materials were being used. During this two week observation period, patient return rates were very high; 67 percent for men and 97 percent for women, suggesting that improved provider per-

formance[30] was responsible for the improvement (123).

These studies suggest that special educational interventions can improve STD-related knowledge and can affect attitudes toward preventive behavior. Here, the person-to-person interview appears to be relatively more effective than other methods. Results have not been encouraging from studies that have attempted to measure actual changes in risk behavior. Neither distribution of free condoms nor special counseling was effective in reducing STD reinfection. Provider performance, however, may influence compliance with a recommendation to return to clinic. Interventions aimed at maintaining high levels of provider performance may be effective in improving patient knowledge, attitudes, and compliance with behavioral recommendations.

Sexually Active Women of Childbearing Age

Although most adults with AIDS are men (92 percent), women represent the fastest growing segment of the population with AIDS. Seventy-one percent of women with AIDS are black and Hispanic (86). One-half (51 percent) of women with AIDS are IV drug users and nearly one-third (29 percent) contracted the disease through sexual contact with an infected male (most of whom contracted AIDS through IV drug use) (192). Clearly, curbing IV drug use among women and changing the sexual practices of IV drug users would reduce HIV transmission among women.

Researchers and practitioners attending a recent workshop[31] concluded that "while educational campaigns featuring brief, clear information are a first step, increased knowledge by itself does not lead to needed behavior change (177). Changing women's sexual behaviors may require interventions that "empower" women to have more control within their sexual relationships. For example, interventions that help women assert themselves with their sex partners or develop communication skills effective in getting their partners to consistently and properly use condoms and engage in other safer sex practices may be effective. Although studies of such approaches are currently underway, there are no published data regarding the effectiveness of these approaches.[32,33] In addition to approaches to help women initiate change, other interventions, such as support groups, may be needed to sustain behavioral change.

Recognizing that high-risk, reproductive-age women may be reached through federally-funded family planning clinics,[34] Title X funds have recently been made available to support AIDS-related educational activities (27). CDC also funds risk-assessment, and risk-reduction counseling, and HIV testing for women in family planning clinics (21). One educational needs assessment conducted within a San Francisco family planning clinic in 1987 revealed that such clinics serve a population at high risk for AIDS; of 545 women aged 13-49 surveyed, 7 percent reported using IV drugs, 10 percent reported sex with a bisexual male, 9 percent reported sex with an IV drug user, 34 percent reported multiple sexual partners, and 30 percent reported sexual intercourse with a partner whose sexual history was unknown. Despite the high prevalence of risk behaviors, more than half (55 percent) reported that their sexual partners "never" use condoms (148). A 1987 statewide survey of women attending Planned Parenthood clinics in Pennsylvania revealed that 1.5 percent were

30 Provider performance is thought to have improved as a result of having an observer present during the patient/clinician encounter.

31 The workshop, "Women and AIDS: Promoting Healthy Behaviors," was cosponsored by The National Institute of Mental Health and The National Institute on Drug Abuse.

32 For example, J. Mondanaro is using empowerment techniques in interventions targeted to partners of IV drug users and prostitutes (see description of her NIDA-funded project in appendix B).

33 The potential untoward consequences of increasing the assertiveness of women in dependent relationships must also be monitored (e.g., physical abuse of prostitutes by pimps).

34 Title X provides family planning services to 4.3 million sexually active women annually. Most of these women are young, many are members of minority groups, and 85 percent are members of low-income families. These women are thought to be at high risk of HIV infection (27).

IV drug users and 4.3 percent were sex partners of IV drug users (21).

Within family planning clinics, evaluation research in the following areas would assist in developing effective educational programs: evaluation of protocols for risk assessment that may be used as a part of client education; evaluation of acceptance of AIDS counseling and testing offered on site vs. upon referral; evaluation of various counseling approaches (individual and group counseling, support programs for infected and non-infected high-risk women); evaluation of client contraceptive choices following AIDS counseling and testing; and evaluation of the provision of contraceptive services on an outreach basis to IV drug use clinics/programs (135).

In an effort to prevent perinatal transmission of AIDS, the CDC has recommended that all women of childbearing age with identifiable risks for HIV infection be routinely counseled and tested[35] for HIV antibodies (183). As part of this effort, AIDS-risk assessment, education, and counseling could be conducted at a number of clinical facilities serving women including physicians' offices, family planning clinics, STD clinics, drug treatment clinics, Women, Infants, and Children Program (WIC) clinics, and prenatal clinics (32). The CDC is funding several Perinatal AIDS Prevention Community Demonstration Projects that include evaluations of how well women at risk of HIV infection are identified and how contraceptive practices are affected by AIDS educational interventions (see appendix B).

Women who exchange sex for money or drugs are at risk of HIV infection through IV drug use and through their multiple and potentially high-risk sex partners. If infected, these women may transmit HIV infection to their babies and to male clients. CDC is collaborating with others in an ongoing, cross-sectional study of women who have engaged in prostitution in several geographic areas (182).[36] Prostitutes have been recruited for participation in the study of HIV seroprevalence and AIDS risk factors through STD clinics, prisons, or outreach efforts, such as newspaper advertising and street contacts. Results of the study show that the major risk factor for HIV infection in prostitutes is IV-drug use, and not exposure to infected partners. Only 13 percent of women tested have returned to learn their test results. The return rate is better in San Francisco where outreach workers visit neighborhoods where the women are working than in other sites where study participants must travel to medical facilities to receive their test results (182). This suggests that education efforts targeted to prostitutes may be more effective when delivered by community role models and peers. Most prostitutes report some use of condoms by their customers, but efforts at maintaining safer sex practices may be hampered by customers' offering higher fees for unsafe sex practices. Customer education may therefore be key to improving compliance with safer sex recommendations (6). Barrier contraception, however, is generally not used with steady sexual partners who may be HIV infected (157).

Conclusions

No formal evaluations of AIDS educational programs implemented within clinics serving high-risk heterosexuals are available. Results of evaluations of STD clinic educational interventions, however, suggest that special educational interventions can improve knowledge and can affect attitudes toward preventive behavior. Here, the person-to-person interview appears to be relatively more effective than other methods, such as use of videotapes and special educational materials.

35 "Routine counseling and testing" is defined as a policy to provide these services to all clients after informing them that testing will be done. Except where testing is required by law, individuals have the right to decline to be tested without being denied health care or other services.

36 The areas are Atlanta, Colorado Springs, Las Vegas, Los Angeles, San Francisco, Miami, and the tri-city area including Newark, Jersey City, and Patterson (182).

Results have not been encouraging from studies that have attempted to measure actual changes in risk behavior attributable to an educational program. For example, neither distribution of free condoms nor special counseling were effective in reducing STD reinfection (46,171). Provider performance, however, may have influenced patient compliance with a recommendation to return to the clinic (118). Given that the provider-client interview appears to be a preferred medium of communicating STD information and that the performance of the counselor affects client compliance, resources may be effectively used to ensure the quality of providers of AIDS and STD services (e.g., comprehensive training, continued education opportunities, interventions aimed at reducing provider stress, and burnout).

There are limited data on the size and characteristics of the high-risk heterosexual population. Certain groups, however, are recognized as being at high risk, and within these groups, innovative approaches are required to facilitate behavioral change. For example, interventions to "empower" women that may be involved in dependent relationships (e.g., partners of IV drug users; prostitutes) to encourage their partners to use condoms without, at the same time, jeopardizing themselves are being evaluated (see appendix B).

CERTAIN PRACTICES OF SCHOOL-AGE YOUTH

Introduction

Very few teenagers have AIDS.[37] As about one-fifth of all people with AIDS are in their twenties, however, many are likely to have contracted HIV while teenagers. Preventing the 29 million U.S. teenagers from entering AIDS risk groups may be the most effective method of AIDS primary prevention because much of what teenagers learn and do as adolescents will affect their sexual and other risk-taking behaviors in later years. Evidence suggests that this will be a major challenge as many teenagers are now engaging in behaviors involving both sex and drugs that can transmit HIV.

School-Age Youth AIDS-Related Risk Behaviors

Risky sexual behavior is widespread among teens. According to national survey data, 78 percent of males and 63 percent of females have sex while teenagers (93). Although most teenagers do not have sex until they are age 16 or 17, in some communities the average age of first intercourse is 12 (33). For a substantial number of teens, sexual activity is not infrequent; among teens 15 years of age and older, at least one-third report having sex once a week or more (93). Of those that are sexually active, over 50 percent report having two or more partners (223) and less than half say they used any method of birth control at first intercourse (152). These behaviors have resulted in alarming rates of sexually transmitted diseases (STDs) among teens; teenagers acquire more than one-fourth of the estimated annual 20 million STD cases (222).

Teens at very high risk include the estimated 125,000 to 200,000 who become involved in prostitution each year (120) and those using intravenous drugs. One national survey indicates that 1 percent of United States high school seniors have used heroin (9). Of special concern are those living in communities where HIV is already prevalent, where there is more IV drug use, and where sexual intercourse is initiated earlier, is more frequent, is not protected by condoms, and is experienced with more partners.

37 As of May 2, 1988, 257 out of a total of 60,852 AIDS cases reported to CDC occurred among those age 13 to 19 (192).

The Effectiveness of Specific Educational Interventions

In response to the threat AIDS poses to young people, by March 1988, 18 states had passed legislation requiring AIDS education in schools. Information about AIDS is being disseminated in schools; 51 percent of parents report that their 10-17 year-old children have already had some AIDS instruction (53). Because AIDS education is relatively new and curricula are still being developed, however, little specific information is available regarding what is actually being taught, at what grade level, within what classes, and to how many students. Furthermore, there is virtually no information regarding how effective school-based AIDS educational programs are in changing student risk behaviors. The CDC's Center for Health Promotion and Education, Office of School Health and Special Projects has funded 15 national organizations, 15 State education agencies, and 12 local education agencies to examine AIDS education within the public schools. Changes in knowledge and attitudes, and in some cases, reported behavioral intentions and behaviors, will be monitored through the use of pre- and post-intervention surveys (see appendix B).

Until data from AIDS education evaluations are available, it is worthwhile to examine the effectiveness of sexuality education programs that often include many of the same goals as AIDS education programs; to delay sexual intercourse, to reduce the number of sexual partners, and to increase the use of methods of birth control, such as condoms. Moreover, many of the decisionmaking and communication skills that sexuality educators teach are the same skills that some AIDS educators believe should be taught to reduce the transmission of the HIV virus.

This section reviews what is known regarding: 1) current levels of adolescent AIDS-related knowledge, attitudes, and beliefs; 2) the effectiveness of AIDS interventions aimed at improving knowledge and changing attitudes; and 3) the success of sexuality education in changing sexual behaviors.

AIDS Knowledge, Attitudes, and Beliefs

Several studies have demonstrated that adolescents are quite knowledgeable about AIDS, particularly about the fact that vaginal and anal intercourse with an infected partner can transmit HIV. For example, a 1986 random telephone survey of 963 adolescents 16 to 19 years old in Massachusetts revealed that 98 percent knew that anal intercourse could transmit HIV and 92 percent knew that vaginal intercourse could transmit the virus (168). Some school-based surveys, however, suggest that there are important knowledge deficits. For example, in a 1986 survey of Connecticut secondary school students only half knew that people who shoot drugs (325/638) represented a high-risk group (89). A survey conducted one year earlier in San Francisco showed that while 92 percent (1213/1313) of the students correctly indicated that "sexual intercourse was one mode of contracting AIDS," only 60 percent (782/1303) were aware that "use of a condom during sexual intercourse may lower the risk of getting the disease" (62). Black and Hispanic adolescents were less knowledgeable about AIDS and were more likely to have misconceptions about transmission than white students (60). Most students reported wanting to learn more about AIDS, and many indicated that information about AIDS should be presented in public schools. Although more recent survey data are not available, researchers report that AIDS knowledge is likely to have improved (112).

Available data suggest that teenagers have initiated little behavioral change in response to AIDS. For example, the survey of Massachusetts adolescents conducted in 1986 revealed that of the 70 percent reporting sexual activity, only 15 percent had changed their sexual behavior because of concern about contracting AIDS, and of these, only 20 percent had implemented effective changes. Many adolescents, including those in the highest-risk subgroups of sexually active or psychoactive drug users, did not know what

sexual and drug precautions are needed to prevent transmission of the virus (168). To ascertain changes in knowledge, attitudes, and use of condoms in response to the threat of AIDS, a survey was conducted among sexually active adolescents attending a university or a health maintenance organization in San Francisco in 1984/85 and again in 1985/86. Although the perception that condoms prevent STDs and the value and importance placed on avoiding STDs remained high, adolescents did not report increased use, or intentions to use condoms over the study period (107).

Effectiveness of AIDS Education in Changing Knowledge and Attitudes

Thus far, evaluations of AIDS education programs in schools have focused upon changes in knowledge and attitudes (see table 2-3 for a description of evaluations of AIDS educational interventions). Significant increases in knowledge have occurred as measured before and immediately following AIDS education programs. For example, in one study, the percentage of students knowing that using condoms during intercourse is one way to help prevent the spread of AIDS increased from 70 to 87 percent (61). In another study, AIDS-related knowledge increased markedly, and students' perceptions regarding personal risk of AIDS declined slightly following the AIDS program (136). In neither study was the impact of the educational intervention on changes in risk behaviors evaluated.

Whether educational programs will affect teens' AIDS risk behaviors is uncertain. Some evidence suggests that young people who have not been exposed to an educ'tional program overestimate both the number of cases of AIDS and the chances of getting AIDS from a single unprotected act of heterosexual intercourse (80). A 1985 survey of black and Hispanic adolescents showed that more knowledge about AIDS was associated with a lower perceived risk of contracting AIDS (60). AIDS-educated youth are probably more aware that they will not contract AIDS from casual contact with others.

Effectiveness of Sexuality Education

Lessons relevant to AIDS education can be learned from the literature regarding the effectiveness of sexuality education programs designed to reduce teen pregnancy and STDs other than AIDS, and to improve teens' sexual self-awareness and communication skills. Evidence from numerous studies indicate that sexuality education increases factual knowledge about sexuality and sexually transmitted disease but has little measurable impact upon attitudes (112). Few studies have adequately measured communication and other skills thought to be necessary to implement behavioral change, and the results of these are mixed.

One intervention, a 14-part, intensive cognitive-behavioral training course, used role playing and rehearsal to improve communication skills and attitudes compatible with lowering risk of pregnancy. At six-month followup, the 18 participants reported practicing more effective contraceptive methods and exhibited better communication skills than the control group. The evaluation of the intervention relied upon excellent measurement techniques, but its findings are limited because few students were involved in the program (160). Another study of several comprehensive sexuality courses found no impact on skills even though considerable time was devoted to teaching and practicing those skills in the courses. This study included a larger number of students but employed less valid methods of measurement than the smaller study reported above (113). The results of an intervention aimed at postponing sexual involvement among adolescents should be available in the near future (112). Investigators are evaluating an educational series designed to help adolescents resist social and peer pressures that can lead to early sexual involvement. A companion program for parents helps adults better understand the pressures experienced by adolescents and assists parents in reinforcing the information given to their children in school (96).

Sexuality education programs do not appear to have had an impact upon sexual in-

tercourse, either initiation or subsequent frequency. Although one major national study did find that among 15 and 16 year old females, those who had previously taken a sexuality education course were somewhat more likely than those who had not to initiate sexual activity at ages 15 and 16 (127), other national surveys have not found such a relationship (224). Preliminary findings from an evaluation of at least one community-based program specifically designed to reduce teen pregnancy suggest that the program may have succeeded in that effort (205). Here, an educational campaign intended to curb high teen pregnancy rates included the involvement of parents, churches, schools, the media, and other community organizations. Pregnancy rates dropped by more than half in the rural South Carolina county where the intervention was implemented. Whether the drop can be attributed to the program is, however, uncertain. Pregnancy rates in small populations may fluctuate from year to year. Furthermore, the unique program setting limits the generalizability of results.

In general, studies suggest that sexuality education may have a modest impact upon use of birth control during the first episode of sexual intercourse, and upon ever using it, but not upon current use. In one study of high school students, students who were more knowledgeable about the probability of becoming pregnant did not report unprotected intercourse less frequently than those students who were less knowledgeable. Similarly, students who were more knowledgeable about birth control were not more likely to use it (142). None of three major studies that evaluated the effect of educational interventions upon the incidence of pregnancy found a measurable impact (127,224,49).

The results of evaluations of sexuality education are consistent with studies of other kinds of educational programs designed to improve healthy adolescent behaviors. For example, driver education increases knowledge, but does not measurably reduce automobile accidents among teenagers. Other programs targeted to adolescents, however, have been successful. For example, some anti-smoking programs for young adolescents have helped them delay or refrain from smoking, and a few drug education programs, particularly those that focused upon skills, have had some success (20,73).

There are a number of reasons why increases in knowledge from sexuality educational programs have limited impact upon behavior. First and foremost, there are many important factors other than knowledge that affect teenage sexual and contraceptive behavior. Over many years, teenagers are socialized by parents and peers and exposed to television and other media of popular culture. Their behavior is affected by a myriad of internal factors, such as physical development and sexual desires, emotional needs for affection and physical contact, ego strength, plans for the future, perceived ability to control one's own future, and attitudes toward parents and society. Other factors such as the availability of birth control may affect behavior. It is not surprising therefore, that a small amount of school-supplied information about sexuality has limited impact, especially since many programs produce only modest increases in knowledge and that knowledge may diminish with time.

Although most students know even before they take a sexuality education class that sexual intercourse can lead to pregnancy and that pregnancy can be avoided by using birth control methods, many young people do not apply their knowledge to their own behavior. As evidence that teenagers do not apply information to their personal situations, one investigator found that sexually active adolescents who could correctly answer questions about the timing of ovulation and pregnancy were not more likely to assess accurately their own probability of becoming pregnant. In fact, those that did not know whether or not they would get pregnant were more likely to use birth control (142). These findings suggest that those that are unaware of their actual risk may overestimate their risk and therefore be motivated to use birth control.

Another factor contributing to failure to use effective contraception is that sex among

sexually active young people may occur infrequently and is often unplanned. Teenagers who have sex infrequently may not have yet fully accepted the fact that they are sexually active and therefore may be inhibited about seeking information on contraception (112).

Conclusions

Whether the findings from research on sexuality education can be used to guide AIDS educational interventions depends in part upon teenagers' perceptions of the burden and risk posed by AIDS. Teens may be more highly motivated to adopt preventive behaviors to prevent a life-threatening disease than to prevent pregnancy or a treatable sexually transmitted disease. If teenagers do not believe that they are personally at risk of getting AIDS, however, then they may not respond to educational efforts.

In reality, for most teenagers, the probability of having sex with someone infected with HIV is quite small, and the probability of actually contracting HIV from that person is still smaller. Because teenagers, like adults, have difficulty making decisions when probabilities are small, they may be unlikely to change their behavior when provided accurate information. Educational programs may be more effective in high-risk communities where a higher percentage of people have AIDS. In such communities, the actual risk of contracting AIDS is higher and thus represents a more serious threat to teenagers. Moreover, the teenagers are more likely to know personally someone who is HIV-infected or has AIDS and thus apply the risk and costs of contracting AIDS to their own situations. To help make the risk of AIDS more personal, information about AIDS can be presented within the context of other, more prevalent STDs, such as gonorrhea and herpes simplex, with which adolescents may have greater familiarity (61).

To be effective at reducing risk-taking behavior, AIDS education programs must do much more than simply increase knowledge. Programs that use role playing extensively to improve decisionmaking and communication skills and possibly reinforce particular norms may be effective (160). In the case of AIDS, role playing may involve students' practicing how to say "no" to sex, how to refrain from having sex when condoms are not available, how to discuss the threat of AIDS without offending their sex partners, and how to insist upon the use of condoms when having sex.

AIDS educational efforts could be integrated into much more comprehensive community-wide programs that reinforce it. In addition to involving schools, such programs can include parents, radio and television stations, newspapers, churches, youth-serving agencies, family planning agencies, and other community groups or organizations. School programs are much more likely to be effective if the norms expressed in those programs are supported and reinforced by the larger social environment. At least one study indicates that such programs do affect behavior (205). When AIDS educational programs are implemented in the schools, teachers need to be trained to communicate sensitive information. Teachers who are uncomfortable discussing sexuality and specific sexual and drug-related behaviors are not likely to be effective in facilitating frank, open discussions (62).

There is evidence from other health areas, such as smoking, indicating that when programs are implemented earlier, they may be more effective. AIDS educational programs could be implemented in elementary and middle schools, as well as in high school. As gains in knowledge and attitudes acquired through educational programs appear to decline with time, there is a need to reinforce AIDS prevention messages. As adolescents advance through the school system, new, age-appropriate messages could be introduced.

Programs may be more effective if adolescents, themselves, play a major role in the educational program and accept some responsibility for the effectiveness of the programs (41). When many student leaders openly and consistently express norms against

risk-taking behavior, school-wide norms may change. Another reason to implement AIDS education programs early is that those students who are most likely to live in high-risk areas and to engage in risk-taking behaviors are also more likely to drop out of school. Nationally, about 25 percent of young people drop out of school before high school graduation (112), and the percentages are much higher in communities where AIDS is likely to be more prevalent.

In addition to school drop-outs, other high-risk adolescents may not be reached through school-based AIDS educational interventions. Teen runaways, teens engaged in prostitution, and youths in juvenile detentions programs will need to be reached through community-wide strategies. One suggested approach is to train and utilize indigenous community members and groups to serve as AIDS educational resources and as community outreach workers (62). The CDC is funding several projects to reach out-of-school youth through the National Programs for School Health Education to Prevent the Spread of AIDS (SHEPSA). For example, the National Coalition of Hispanic Health and Human Services Organizations will provide agencies serving out-of-school Hispanic youth with educational materials (see appendix B).

Shelters for the homeless may be an important site for AIDS educational activities as many of them serve the estimated 1 to 1.25 million minors that annually run away from home. Characteristics of runaway and homeless youth vary in different locals but many appear to be at high risk for AIDS. One New York City-based study found 85 percent to be sexually active, 10 percent engaged in prostitution, and 5 percent using IV drugs. Anecdotal data from Los Angeles suggest that as many as 35 percent of runaway youth there have been thrown out of their homes because of homosexuality (200). AIDS information for street youth and incarcerated juveniles must be simple, explicit, and direct. As many of these youth are learning disabled or have other problems with reading, verbal educational approaches are preferable (153). The National Institute of Mental Health is funding evaluations of AIDS prevention activities implemented for adolescents who seek services at runaway shelters or at agencies serving homosexual youth (see appendix B).

Table 2-1.--Effectiveness of Educational Interventions Targeted to IV Drug Users

Author	Educational goal	Intervention(s)/ Outcome measure(s)	Study design	Study population/ Sample Size/ Year(s) data collected	Results/ Comments
Chaisson, Osmond, et al., 1987	Encourage safer injection practices among IVDUs.	Interventions: Bleach distribution, AIDS education provided by outreach workers. Outcome measure: Reported use of bleach.	Pre-post intervention cross sectional surveys.	Study population: Bleach distributed to San Francisco IVDUs not in treatment. Surveys conducted among IVDUs in treatment. Sample size: 1985 survey included 152 IVDUs in treatment. In 1987, 172 were surveyed. Years data collected: Bleach distribution in 1986, surveys conducted in 1985 and 1987.	Results: Reported bleach use (usually or always) rose from 6% pre-intervention to 47% post-intervention. Comment: The prevalence of HIV antibody positivity among addicts in treatment rose from 10% in 1985 to 15% in 1987.
Jackson and Rotkiewicz, 1987	1. Promote enrollment in drug treatment. 2. Encourage drug users not to share injection equipment. 3. Teach methods of sterilizing injection equipment.	Interventions: Ex-addict AIDS outreach workers provided face-to-face education and distributed "vouchers" redeemable for a free treatment episode in a detoxification program. Outcome measure: Enrollment in treatment.	Descriptive.	Study population: New Jersey IVDUs who had not sought treatment for at least one year received vouchers. Sample size: Characteristics of those redeeming the first 1,000 vouchers distributed are described. Year data collected: 1986	Results: Over 80% of the first 1,000 vouchers were redeemed. Young black males, previously under-represented in the State treatment system, were overrepresented among those redeeming the vouchers. 40% of redeemers had not previously been in treatment. 28% of redeemers went on to longer-term treatment.
McAuliffe, et al., 1987	Improve AIDS knowledge and reduce unsafe drug injection and sexual practices.	Interventions: Ex-addict outreach workers distributed information about AIDS. They did not distribute bleach for use in sterilization. Outcome measure: Changes in knowledge and practices ascertained at interview.	Quasi experimental. Educators were assigned to work in half of randomly selected city areas. Pre-interview scores were compared to those obtained one month after the intervention.	Study population: Baltimore IVDUs. Sample size: 236 individuals in intervention areas; 72 in control areas. Year data collected: 1986	Results: Individuals in intervention areas showed significant changes in knowledge and showed greater but, statistically insignificant, increases in risk reduction. Comment: The intervention may not have been successful in changing behavior because it did not provide any easy and convenient methods for sterilization and did not provide access to treatment programs.

Table 2-1.--Effectiveness of Educational Interventions Targeted to IV Drug Users--Page 2

Author	Educational goal	Intervention(s)/ Outcome measure(s)	Study design	Study population/ Sample Size/ Year(s) data collected	Results/ Comments
Van den Hoek, et al., 1987	Promote safe injection practices.	Intervention: A needle exchange program was established prior to 1985 to reduce the spread of hepatitis among IVDUs. Outcome measure: Needle exchange program utilization.	Pre-post intervention cross sectional surveys.	Study population: IVDUs in Amsterdam. Sample size: Total population of IVDUs. Years data collected: 1985-86	Results: Prior to the AIDS epidemic less than 10% used the needle-exchange program. Following the AIDS epidemic, utilization rose to almost 50%. Comment: The needle exchange program was not effective in reducing the spread of hepatitis B among IVDUs probably because IVDUs did not consider hepatitis B to be a sufficient threat to use sterile equipment sufficiently frequently.
Watters, 1987	Improve AIDS knowledge and improve injection equipment sterilization practices.	Interventions: AIDS Information provided and small bottles of bleach distributed by outreach workers. Outcome measure: Reported use of bleach.	Pre-post intervention cross sectional surveys.	Study population: San Francisco IVDUs not in treatment. Sample size: 438 IVDUs were interviewed in first survey (Winter/ Spring, 1986); 500 in second survey (Winter/ Spring, 1987). Years data collected: 1986, 1987	Results: 3% of IVDUs reported using bleach before the program as compared to 67% after the program had been in effect for about 6 months. Comment: Reductions in reported needle sharing, increased use of condoms, and increased AIDS knowledge occurred.

Abbreviations: RCT = randomized controlled trial; IVDUs = IV drug users

SOURCE: Office of Technology Assessment, 1988, based on a contractor document by Don C. Des Jarlais, "The Effectiveness of AIDS Educational Programs for Intravenous Drug Users," prepared for the Office of Technology Assessment, March 1988.

Table 2-2.--Effectiveness of Educational Interventions Targeted to Attendees of Sexually Transmitted Disease Clinics1

Author	Educational goal	Intervention(s)/ Outcome measure(s)	Study design	Study population/ Sample Size/ Year(s) data collected	Results/ Comments
Alkhateeb, et al., 1975	Improve patients' knowledge related to STDs.	Interventions: 1. Programmed learning guide. 2. Audiovisual technique. 3. Person-to-person interview. Outcome measures: STD knowledge as measured on pretest and posttest questionnaires.	Modified Solomon design (allows isolation of the effect of the intervention from effects of the evaluation process (e.g., learning from taking a pretest).	Study population: STD clinic attendees. Sample size: 443 participants allocated to 9 groups. Years data collected: Unknown	Results: The three interventions accounted for a 20% increase on posttest knowledge scores. The interview technique was the most effective. Comment: Educational interventions were well accepted by the clinic attendees; 80% of participants judged the time spent using the educational techniques to be "just right."
Darrow, 1987	Assess STD clinic attendees' acceptance and effective use of free condoms.	Interventions: Coupons for free condoms were given to participants. Outcome measures: Proportion redeeming condom coupons. Reduction in gonorrhea reinfections.	Cross sectional study of condom acceptance. Prospective study of gonorrhea reinfections.	Study population: Consecutively admitted patients to the Sacramento STD clinic over a 3 month period completing a self-administered questionnaire. Sample size: 2,045 of 2,358 clinic attendees completed the questionnaire. Year data collected: 1971	Results: 27% of participants received condoms. 35% of males accepted the offer, but only 19% of females did. Prior condom use and history of STD were related to acceptance. Acceptors and non acceptors of condoms had the same rates of reinfection with STDs.
Educational Development Center, Inc., 1986	Phase I: 1. Increase the number of male gonorrhea patients to return to STD clinic for followup. 2. Motivate male patients to refer sex partners for treatment.	Interventions: Phase I: "soap-opera" type videotapes featuring black actors using a non-authoritative approach. Emphasis on changing attitudes and modeling communication and interpersonal skills. Outcome measures: Phase I: 1. Rates of return for followup within 14 days. 2. Proportion of sex partners treated at the STD clinic.	Randomized clinical trial conducted in three phases.	Study population: Inner-city (Baltimore, Washington D.C., and Boston), primarily black STD clinic attendees ages 18-35. Sample size: Phase I: 456 in experimental group, 446 in control group. Years data collected: 1983-86	Results: Phase I: Rates of return for experimental group 53.5%, for control group 43.3%. Comment: Phase I: The pre-study return rate was 42.9%.

Table 2-2.--Effectiveness of Educational Interventions Targeted to Attendees of Sexually Transmitted Disease Clinics[1]--Page 2

Author	Educational goal	Intervention(s)/ Outcome measure(s)	Study design	Study population/ Sample Size/ Year(s) data collected	Results/ Comments
Educational Development Center, Inc., 1986 (cont.)	Phase II: Increase compliance with prescribed oral medication.	Interventions: Phase II: Videotape, and/or special pill packaging. Outcome measures: Phase II: Medication compliance as reported by telephone interview on the 2nd or 6th days after treatment.	RCT.	Study population: Phase II: Black, single, males, average age 23, most diagnosed with non-gonococcal urethritis. Sample size: Phase II: 372 treated patients were randomly assigned to intervention groups. Years data collected: 1983-86	Results: Phase II: Participants who viewed the videotape or received special medication packaging scored significantly higher on the 15-item medication compliance test than controls. Comment: Phase II: With the combination of videotape and special medicine packaging, 70% of patients took medication as prescribed. Those receiving one or another of the interventions were more likely to have refrained from sex until the followup interview.
Educational Development Center, 1986, Inc., (cont.)	Phase III: 1. Encourage men to use condoms. 2. Encourage women to be assertive in requesting that their partners use condoms.	Interventions: Phase III: 1. Videotape, followed by an in-depth discussion including review of a checklist of items discussed. 2. Free condom distribution via a redeemable coupon vs. mail-in coupons. Outcome measures: Phase III: Knowledge and attitudes as measured by assessment questionnaires administered after the discussion.	RCT.	Study population: Phase III: English-speaking STD clinic attendees age 18 and older. Sample size: Phase III: 1. Videotape/ discussion intervention. 51 in experimental group, 52 in control group. 2. Condom distribution. 89 in experimental group, 93 in control group. Years data collected: 1983-86	Results: Phase III: 1. 71% of experimental group demonstrated attitudes compatible with prevention compared with 33% of control group. 2. Patients watching the video were more likely to redeem coupons for free condoms than controls.

Table 2-2.--Effectiveness of Educational Interventions Targeted to Attendees of Sexually Transmitted Disease Clinics[1]--Page 3

Author	Educational goal	Intervention(s)/ Outcome measure(s)	Study design	Study population/ Sample Size/ Year(s) data collected	Results/ Comments
Kroger, 1980	Improve rate of return for followup among treated STD attendees.	Interventions: 1. Use of patient-clinician contracts outlining positive patient behaviors. 2. New educational materials for waiting room and patient instruction sheets (cartoon-type). Outcome measures: Return rates for "test of cure" among both men and women.	Pre/post evaluation and natural experiment. A separate STD patient population seen in the same clinic by other health providers served as a control group to the intervention group. Control group members were participating in drug studies and reimbursed for followup.	Study population: The STD clinic population was 95% black and 65% male. Sample size: 715 men and 290 women. Years data collected: Unknown	Results: Rates of return improved for women (pre-study 35% vs. post-study 73%) but not for men (pre-study 33% vs. post-study 37%). The control population return for followup rate was 38%. Comment: During the study period rates of return were very high for both men (67%) and women (97%). Increases are attributed to the Hawthorne effect (impact of study observers). This suggests improvements in provider performance impacts patients' compliance.
Potterat and Rothenberg, 1977	Evaluate an alternative to the standard case interview and investigation process.	Interventions: Control group received standard contact interview (20 minutes) and were told to refer sexual contacts (Patients were told that partners not seen in clinic within 7 days would be followed up by the clinic). Experimental group received a 3-5 minute counseling session and were given referral cards for partner referral. Outcome measures: Sex partners per index cases coming to STD clinic for evaluation.	Alternate patients assigned to experimental and control groups.	Study population: Heterosexual male gonorrhea patients seen in a STD clinic. Sample size: 93 in experimental group, 94 in control group. Year data collected: 1975	Results: Control group referred 58% of contacts compared with 80% in experimental group. Comment: The experimental intervention was more cost effective than standard care in terms of sex partner referral.

Table 2-2.--Effectiveness of Educational Interventions Targeted to Attendees of Sexually Transmitted Disease Clinics[1]--Page 4

Author	Educational goal	Intervention(s)/ Outcome measure(s)	Study design	Study population/ Sample Size/ Year(s) data collected	Results/ Comments
Tucker, 1977	Reduce gonorrheal reinfection among STD clinic attendees.	Interventions: Counseling patients to avoid sex with untreated sex partners, and to use condoms to avoid reinfection. Outcome measures: Sexual activity as reported in an interview.	RCT.	Study population: STD clinic patients with first uncomplicated gonococcal infection who were at least age 16. Those returning to the clinic with a reinfection within 4 months were interviewed and randomly assigned to an intervention or control group. Those not returning within 4 months were contacted for followup. 78% of participants were black. Sample size: Of 500 male participants, 73 (14.6 percent) returned to clinic reinfected within 4 months. Among those not returning but followed up, 30% were reinfected. 18% of study participants were lost to followup. Years data collected: 1975-77	Results: Men in the experimental group experienced the same rate of reinfection as those in the control group (21%). Comment: Sociodemographic characteristics associated with recidivism include age and race.
US DHHS, CDC, Div. STD, 1978	1. Encourage gonorrhea patients to notify their sexual contact of the need for examination. 2. Improve clinic return rates.	Interventions: Three interventions were studied: 1. Pamphlet, counseling, dispensing of partner referral cards; 2. Counseling plus request for names of sexual contacts for clinic followup; 3. Minimal control interview plus dispensing of partner referral cards. Outcome measures: Number of gonorrhea positive cases per index case.	RCT.	Study population: Male and female gonorrhea patients seen in a STD clinic in Miami, Florida. Sample size: 1,898 gonorrhea patients. 94% male. Years data collected: Unknown	Results: Groups 1 and 3 (use of partner referral cards) each yielded 0.36 gonorrhea positive sexual contacts per index case. Group 2 yielded 0.6 per index case. Comment: Although clinic followup yielded more diagnosed partners per index case, the costs were 3-4 times the cost of patient-initiated follow up.

Abbreviations: RCT = randomized controlled trial; STD = sexually transmitted disease

[1]Educational interventions pertain to STDs other than AIDS.

SOURCE: Office of Technology Assessment, 1988, based on a contractor document by Stephen Margolis, "The Effectiveness of Educational and Related Efforts among Attendees of Public Clinics for Sexually Transmitted Diseases," prepared for the Office of Technology Assessment, Washington, DC, March 1988.

Table 2-3.--Effectiveness of AIDS and Sexuality Educational Interventions Targeted to Adolescents

Author	Educational goal	Intervention(s)/ Outcome measure(s)	Study design	Study population/ Sample Size/ Year(s) data collected	Results/ Comments
Dawson, 1986	Study assessed the impact of sex/contraceptive education on initiation of sexual activity, use of birth control, and pregnancy.	Intervention: NA Outcome measure: Reported initiation of sexual activity, use of birth control and pregnancy at interview.	Cross-sectional survey. Multivariate logit analysis used to study the relationship between sexuality education and outcomes of interest while controlling for sociodemographic characteristics.	Study population: Women aged 15 to 19. Sample size: 1,888 women were surveyed. Year data collected: Study is based upon the 1982 National Survey of Family Growth.	Results: Sexuality education may be related to initiation of sex for 14 year olds, but not for older teens. Sexuality education was positively related to use of birth control during first coitus and with ever having used birth control but was not related to current use. Sexuality education was not significantly related to pregnancy. Comment: For cases in which sexuality education and initiation of sex occurred in the same year, the temporal order of events could not be determined. The analysis controlled for region, race, income, parents' education, number of parents lived with at age 14, religious practices, and urbanicity.
DiClement et al., 1987	Increase student's knowledge of AIDS/STD transmission and prevention.	Intervention: 3-hour AIDS program. Outcome measure: Performance on knowledge test.	Pretest-posttest design. Comparison of changes in knowledge of exposed vs. control group.	Study population: Students attending San Francisco middle and high schools. Sample size: 366 students in intervention group; 273 in control group. Year data collected: 1986	Results: Intervention group showed statistically significant improvement in knowledge scores (scores increased from 31.4 to 36.0 out of a total of 46) as compared to no significant change for the control group. The proportion of students knowing that using condoms helps prevent AIDS increased from 70% to 87%. Comment: The posttest was administered immediately after the intervention. Program was successful in dispelling misconceptions about casual contact.

Table 2-3.--Effectiveness of AIDS and Sexuality Educational Interventions Targeted to Adolescents--Page 2

Author	Educational goal	Intervention(s)/ Outcome measure(s)	Study design	Study population/ Sample Size/ Year(s) data collected	Results/ Comments
Furstenberg, et al., 1985	Analysis of impact of sexuality education on initiation of sex.	Intervention: NA. Outcome measure: Onset of sexual intercourse as reported on survey.	Cross sectional survey.	Study population: 15 and 16 year olds sampled in the 1981 National Survey of Children. Sample size: 500 Year data collected: Analysis of data on 15 and 16 year olds surveyed in the 1981 National Survey of Children.	Results: Adolescents who had received sexuality education were less likely to have initiated sexual intercourse. Comment: Analyses controlled for age, race, and other background variables.
Kirby, 1984	14 exemplary sexuality education programs were evaluated. Programs varied in goals and methods.	Intervention: Educational approaches varied; some were non school based, some included parents. Outcome measure: Sexual and contraceptive behavior as reported on questionnaires.	Pretest-posttest design. For some programs evaluated, there was a comparison group of students not exposed to the educational intervention.	Study population: Programs located throughout the country and targeted to elementary, junior high or high school students. Sample size: Data from more than 2,000 students completing the pre and post questionnaires were analyzed. Years data collected: early 1980s	Results: None of the sexuality courses had a measurable impact upon the incidence of sexual intercourse. For 11 of the 14 courses, for which impact on contraceptive use could be measured, none had any measurable impact upon contraceptive use. Comment: Only exemplary programs were evaluated. Students could not be randomly assigned to intervention and control groups. The sample sizes for each type of program were rarely more than a few hundred and thus could not detect small effects. The long-term effects of the programs were not measured.

Table 2-3.--Effectiveness of AIDS and Sexuality Educational Interventions Targeted to Adolescents--Page 3

Author	Educational goal	Intervention(s)/ Outcome measure(s)	Study design	Study population/ Sample Size/ Year(s) data collected	Results/ Comments
Marsiglio and Mott, 1986	This study examined the impact of a cross-section of American sexuality education programs.	Intervention: NA. Outcome measure: Responses to personal interviews regarding sexual, contraceptive, and fertility experience.	Longitudinal survey of 14 to 22 year olds first conducted in 1979. The same respondents were reinterviewed each year thereafter. Multivariate logit analysis was used to analyze responses of those reinterviewed in 1984.	Study population: Nationally representative sample of men and women aged 14 to 22 in 1979. Sample size: Analysis is based upon the 6,015 women and 6,054 men reinterviewed in 1984. Year data collected: Based on the 1984 National Longitudinal Survey of Work Experience of Youth.	Results: 14 to 15 year old women having had a sexuality education course were significantly more likely to have initiated sex activity during the following year. This was not true for older females. Sexuality education that included birth control information was not significantly related to recent use of birth control. Sexuality education in general, however, was significantly related to recent use of birth control. There was no significant relationship between having had sexuality education and subsequent pregnancy. Comment: Many programs were short and limited. The study provides no indication of the effectiveness of more comprehensive programs.
Miller and Downer, 1987	Improve AIDS knowledge and attitudes.	Intervention: 50-minute multi-media, AIDS program. Outcome measure: Performance on knowledge and attitude survey.	Pretest-posttest design, no comparison group.	Study population: Seattle high school students. Sample size: 114 students completed pretest 1 month prior to and 1 week after educational program. 53 of these completed a delayed posttest 8 weeks after the program. Years data collected: 1986-87	Results: Knowledge test scores increased from 78% to 90%. The % of students who thought they might get AIDS did not decrease significantly. An 8-week post test showed retention of knowledge. Comment: Students completing the pre and post test were not representative of school population (black students underrepresented).

Table 2-3.--Effectiveness of AIDS and Sexuality Educational Interventions Targeted to Adolescents--Page 4

Author	Educational goal	Intervention(s)/ Outcome measure(s)	Study design	Study population/ Sample Size/ Year(s) data collected	Results/ Comments
Schinke, et al., 1981	Help adolescents avoid unplanned pregnancy by improving communication skills and increasing sense of responsibility for birth control.	Intervention: Intensive cognitive-behavioral training. The 14-part course taught contraceptive information, communication and problem-solving skills through role playing and rehearsal. Outcome measure: Structured interviews were used to measure knowledge and attitudes. Responses to stressful vignettes were video-taped to measure skills.	Students were assigned randomly to one condition of a Solomon four-group design: pretest, training, and posttest; training and posttest; pretest and posttest; and posttest only.	Study population: Public high school sophomores. Sample size: 18 participants were compared to 18 controls. Years data collected: 1979-80	Results: Participants had higher levels of sexual knowledge and better interpersonal problem-solving and communication skills as demonstrated in video performance. Participants were more willing to refuse to risk getting pregnant and more willing to share responsibility for birth control. Comment: At 6-month followup participants had better attitudes toward family planning and were practicing more effective contraceptive methods than controls.
Vincent, et al., 1987	Reduce occurrence of unintended pregnancies among unmarried adolescents. Increase knowledge; align personal values with those of the family, church, and community; improve self esteem; improve decisionmaking and communication skills.	Intervention: Implementation of a comprehensive, community-wide program that involved parents, churches, schools, the media, and other community organizations. Outcome measure: Pregnancy rates for females 14-17 years old for two years before the program was implemented and three years after.	Descriptive. Pre-post intervention design.	Study population: Rural county in South Carolina. Sample size: Approximately 325 females 14 to 17 years old lived in the targeted area. Years data collected: 1981-85	Results: Pregnancy rates dropped by more than half. Comment: Pregnancy rates in small populations may fluctuate from year to year. Whether the drop can be attributed to the program is uncertain. If program was responsible for the drop, it is unclear what component of the intervention was successful.

Table 2-3.--Effectiveness of AIDS and Sexuality Educational Interventions Targeted to Adolescents--Page 5

Author	Educational goal	Intervention(s)/ Outcome measure(s)	Study design	Study population/ Sample Size/ Year(s) data collected	Results/ Comments
Yarber, 1986	Increase knowledge about STD, and improve attitudes toward prevention.	Intervention: A new CDC curriculum emphasizing health behaviors instead of biomedical facts was compared to standard school STD unit and no instruction. Outcome measure: Changes in knowledge and attitude scores.	Quasi-experimental design involving experimental and control groups. Students were not randomly assigned.	Study population: Secondary students in six school districts (1 rural, 2 suburban, 3 urban) in central and eastern States. Sample size: 566 students received the CDC curriculum; 387 no instruction; and 161 the standard curriculum. Year data collected: 1985	Results: CDC curriculum improved STD knowledge, but knowledge gains declined at the delayed 6 week post-test. Beliefs and feelings about healthy behaviors improved significantly and remained improved until the delayed posttest. Intentions to engage in healthy behaviors improved, but not as much and after 6 weeks, were not significantly different from before the program.
Zelnik and Kim, 1982	Study of the relationship between sexuality education and initiation of sex, contraceptive practices, and pregnancy.	Intervention: NA. Outcome measure: Self-reported behaviors on interview.	Cross-sectional survey data are analyzed.	Study population: 1976 and 1979 survey data on a nationally representative sample of women aged 15-19 living in households in SMSAs. Years data collected: Analysis based on two national surveys of teenagers (1976 and 1979).	Results: No consistent relationship was found between sexuality education and initiation of sex. For most age-race groups of women, there was no relationship between sexuality education and use of birth control. For 6 race/age groups, there were statistically significant results indicating that young women exposed to sex education were more likely to have used birth control. Young women who had received sexuality education were less likely to have become pregnant. Comment: The temporal order of sexual activity and sexuality education could not be determined. The analysis controlled only for age, race, and sex.

Abbreviations: RCT = randomized controlled trial; NA = not applicable; SMSAs = standard metropolitan statistical areas

SOURCE: Office of Technology Assessment, 1988, based on a contractor document by Douglas Kirby, "The Effectiveness of Educational Programs to Help Prevent School-age Youth from Contracting AIDS: A Review of Relevant Research," prepared for the Office of Technology Assessment, Washington, DC, March 1988.

THE GENERAL POPULATION AND RISK BEHAVIORS

The general U.S. population consists of people at varying risk of HIV infection. Some take part in behaviors that put them at high risk, such as sharing IV drug equipment or engaging in certain sexual practices with people who may be infected. The vast majority of the U.S. population, however, are most likely at little or no risk, because they do not practice risky behaviors or because they live in areas that so far have had low rates of HIV infection.

Since there is little validated information about the sexual behavior of U.S. adults, estimates of people at risk have relied on Kinsey's study from the 1940s and on extrapolations from the size of groups that have so far accounted for most AIDS cases. Estimates of men who have homosexual contact range from 5-10 million, of people with any IV drug use about 1.1 million, and of people with hemophilia about 15,000 (185) for a total of about 6.5-11.5 million people in 1987. Of course, not all homosexual men or even all IV drug users are at high risk; only those who engage in certain behaviors risk HIV infection (see chapter 2 and appendix A). Adding heterosexuals at risk from infected partners, infants at risk from infected mothers, and people who received blood transfusions before HIV screening began would increase the total number at risk by an unknown amount. But people in these latter categories would have to equal the highest estimates of the other groups for the total at high risk to reach even 10 percent of the 240 million U.S. population.

Although no studies have tested a random sample of the U.S. population for HIV infection, the results of screening certain groups suggest that less than 1 percent of the general population, including high-risk and low-risk people, is infected with HIV (see table 3-1) (185). From 1985 to 1987, HIV infection among first-time blood donors averaged 0.043 percent and among applicants for military service 0.15 percent. Since the Red Cross and the military--and the applicants themselves--attempt to exclude people with high-risk behavior beforehand, these results most likely underestimate the actual prevalence of HIV infection. Similarly, the rate for residential Job Corps entrants and selected hospital patients, 0.33 percent and 0.32 percent respectively, may underestimate infection because the Job Corps does not accept active IV drug addicts and the hospital study excluded infectious disease and cancer patients.

HIV testing has shown consistent patterns across geographical area, age, sex, race, and ethnicity (185). Like AIDS cases, HIV antibody prevalence is much higher in urban than in rural areas and in the East coast, Gulf coast, and California than in other regions. The age distribution of seroprevalence also follows that of AIDS cases, with the highest rates among people in their 20s and early 30s, a pattern that follows sexual activity and IV drug use. Although males have higher rates of AIDS and HIV infection than females, the male-to-female ratio is much lower for HIV infection than the 13-to-1 relationship for AIDS cases (see table 3-1). Infected men outnumber infected women by about 5 to 1 among military applicants and blood donors, but figures approach 1 to 1 in major cities. Without more systematic sampling and study, it is not clear whether differences between HIV infection rates and AIDS cases reflect changes in the underlying pattern of infection, differences between males and females in progression from infection to disease, or self-exclusion by high-risk men from military application and blood donation.

Table 3-1.--Selected Studies of HIV Seroprevalence in the U.S. Population

Group	Date of Data	Percent HIV Positive	Males:Females	Blacks:Whites	Hispanics:Whites
American Red Cross first-time blood donors	January 1985 - March 1987	0.043%	4.6:1	11.6:1	3.0:1
Military applicants	October 1985 - September 1987	0.14%[a]	5.5:1	6.9:1	3.0:1
Jobs Corps residential entrants	First 25,000 from March 1987	0.33%	N.A.	N.A.	N.A.
Selected hospital patients in Midwest, age 15 and older	First 8,668 from September 1986	0.32%[b]	3.2:1	3.2:1	N.A.

N.A. = not available

a Rate has been adjusted to reflect age, sex, racial, and ethnic composition of U.S. population 17-59 years. The crude rate, without adjustment, is 0.15 percent.
b Rate has been adjusted for age and sex.

SOURCE: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, "Human Immunodeficiency Virus Infection in the United States: A Review of Current Knowledge," Morbidity and Mortality Weekly Report 36(S-6):1-48, Dec. 18, 1987.

More rigorous studies are also needed to determine the evolution of viral transmission by race. Although blacks and Hispanics have about 3 times the rate of AIDS cases, the black rate of HIV infection is almost 7 times higher among military recruits and more than 11 times higher among blood donors.

The Department of Health and Human Services through various agencies is undertaking several surveys to obtain information on the prevalence of HIV. The National Center for Health Statistics (NCHS) is planning a national survey of seroprevalence that would draw on a random sample of U.S. households (217). The Centers for Disease Control (CDC) is expanding its testing of patients' blood samples to 40 hospitals across the country and is exploring similar surveillance through diagnostic laboratories and family physicians (185). In collaboration with the National Institutes of Health and State and local health departments, the CDC is also supporting the use of blood tests that are now routinely performed on newborns to gauge the seroprevalence of childbearing women throughout the United States (see chapter 2 on heterosexual adults).

PUBLIC KNOWLEDGE AND ATTITUDES TOWARDS AIDS

Virtually every adult in the United States is aware of AIDS. By August 1987, more than 99 percent had heard of AIDS (50), a significant increase from the 77-91 percent in 1983 (18). Also by 1987, only 2-5 percent did not know that a person could contract the AIDS virus by sharing needles for drug use with a person with AIDS or by sexual intercourse with an infected person (see table 3-2).

Despite these accurate perceptions about known routes of HIV transmission, however, a substantial body of inaccurate knowledge remains about exposures that do not pose a threat (see table 3-2). In 1987, only 18-26 percent knew that a person can definitely not become infected by donating blood, perhaps because people did not realize that a new, sterile needle is used for each donor. Misconceptions also pertained to infection through routine activities; for example, 21-38 percent thought infection is likely from working near someone with AIDS, from using public toilets, or from insects. Although there were differences by age or sex, blacks were significantly more likely than whites to hold these misconceptions. Regarding prevention, 93-94 percent knew that celibacy and a monogamous relationship between two uninfected people were effective, but only 82 percent thought using a condom and 15 percent thought using a spermicide were at all effective (50).

A synthesis of public opinion polls from 1983 through 1986[1] found little change in erroneous perceptions about AIDS transmission through non-invasive means (18). An apparent exception was that people were less likely in 1986 to believe that a person could catch AIDS by working in the same office.

During 1985 and 1986, only a small portion of the general population (5-20 percent) reported changing personal behavior to avoid AIDS exposure, and most of the changes noted were ineffective, such as avoiding water fountains and other public places, avoiding contact with homosexuals, and avoiding restaurants (18). In 1986, half of the 7 percent who reported changing sexual behavior said they were using condoms more frequently. Surveys in 1987 reported higher percentages had made some personal change (37-43 percent), and more of these mentioned taking effective approaches to avoid AIDS. No increase occurred in the percent claiming to have altered their sexual behavior or in the percent using condoms.

1 The 32 polls included were national in scope, surveyed adult men and women, and surveyed between 611 and 2,405 people. Differences in factors such as design and sampling procedure may render the results not strictly comparable across polls. The validity of the results is improved, however, if more than one poll found the same pattern of results, a situation that occurred frequently.

Table 3-2.--Knowledge Regarding Human Immunodeficiency Virus (HIV) Transmission from the National Health Interview Survey by Race

Mode of Transmission[e]	8/87[a] N=2,303			9/87[b] N=3,097			10/87[c] N=3,350			11/87[d] N=3,333		
		Race			Race			Race			Race	
	Total	White	Black	Total	White	Black	Total	White	Black	Total	White	Black
Having sexual intercourse:												
Very likely	92	93	91	94	94	92	93	93	92	93	93	89
Somewhat likely	5	6	3	4	4	3	5	5	6	5	5	8
Somewhat unlikely	0	0	2	0	0	-	0	0	-	0	0	-
Very unlikely	0	0	0	0	0	0	0	0	0	0	0	-
Definitely not possible	-	-	-	0	0	0	0	0	-	0	0	0
Don't know	2	1	3	2	1	5	1	1	2	2	1	2
Sharing intravenous needles:												
Very likely	91	92	92	93	93	87	93	93	90	93	93	90
Somewhat likely	5	6	3	5	4	6	4	4	6	4	4	6
Somewhat unlikely	0	0	1	0	0	-	0	0	0	0	0	0
Very unlikely	0	0	1	0	0	0	0	0	1	0	0	-
Definitely not possible	0	0	0	0	0	1	0	0	-	0	0	0
Don't know	2	2	4	2	2	5	2	2	3	2	2	4
Receiving a blood transfusion:												
Very likely	37	35	50	36	32	54	34	32	45	34	31	47
Somewhat likely	32	32	34	32	33	29	31	31	32	32	32	33
Somewhat unlikely	13	14	6	13	14	5	13	14	8	12	13	3
Very unlikely	13	15	1	15	17	4	16	17	6	17	18	5
Definitely not possible	1	1	0	1	1	1	1	1	2	2	2	2
Don't know	4	3	8	4	4	7	4	4	7	5	4	9
Donating or giving blood:												
Very likely	10	8	23	10	8	24	8	7	16	8	7	19
Somewhat likely	15	14	22	16	15	23	14	12	25	14	12	26
Somewhat unlikely	14	14	11	13	13	13	12	13	11	12	12	12
Very unlikely	35	37	27	34	36	21	35	37	22	35	37	23
Definitely not possible	18	20	6	21	23	10	25	26	16	24	27	10
Don't know	7	6	11	6	5	9	6	5	10	7	6	11
Being coughed or sneezed on:												
Very likely	11	10	15	11	11	18	9	9	14	8	7	14
Somewhat likely	30	30	32	29	29	27	29	28	35	25	25	29
Somewhat unlikely	18	19	14	17	17	15	17	18	13	17	18	12
Very unlikely	22	23	15	22	23	17	23	24	14	22	24	13
Definitely not possible	9	9	11	10	10	9	12	12	11	16	16	14
Don't know	10	9	12	12	11	15	11	10	14	11	10	19

Table 3-2.--Knowledge Regarding Human Immunodeficiency Virus (HIV) Transmission from the National Health Interview Survey By Race (Cont'd)

Mode of Transmission	8/87 N=2,303			9/87 N=3,097			10/87 N=3,350			11/87 N=3,333		
	Total	Race		Total	Race		Total	Race		Total	Race	
		White	Black		White	Black		White	Black		White	Black
Shaking hands or touching:												
Very likely	2	2	4	2	2	4	2	2	3	1	1	4
Somewhat likely	10	10	11	11	11	14	8	7	12	7	6	10
Somewhat unlikely	19	20	18	17	17	18	16	15	20	15	15	17
Very unlikely	39	39	41	38	38	32	39	41	32	37	39	30
Definitely not possible	22	23	16	26	26	20	29	29	23	32	33	28
Don't know	7	6	11	6	6	11	7	6	10	7	6	11
Kissing on the cheek:												
Very likely	3	2	11	4	3	9	3	2	7	3	2	7
Somewhat likely	13	12	15	14	14	20	11	10	17	10	10	12
Somewhat unlikely	21	22	18	19	19	19	18	17	22	17	16	21
Very unlikely	37	38	27	33	34	24	35	37	23	35	36	25
Definitely not possible	19	19	15	23	23	16	25	26	22	28	29	22
Don't know	8	6	12	7	6	12	8	7	9	7	7	12
Kissing with saliva exchange:												
Very likely	36	35	42	35	34	45	30	29	36	29	27	35
Somewhat likely	34	35	28	34	35	28	38	38	40	34	35	35
Somewhat unlikely	10	10	10	10	10	8	10	11	3	11	12	7
Very unlikely	8	9	9	9	9	6	10	11	7	11	11	6
Definitely not possible	2	2	0	2	2	2	3	3	3	4	4	5
Don't know	10	9	10	9	9	10	9	8	10	10	10	13
Sharing drinking glasses:[f]												
Very likely	15	15	20	15	14	23	13	12	19	11	10	19
Somewhat likely	32	32	30	32	32	30	31	31	33	31	30	35
Somewhat unlikely	15	15	14	14	15	11	15	16	10	14	14	8
Very unlikely	19	20	16	19	20	13	21	22	15	19	21	11
Definitely not possible	8	9	6	10	10	8	11	11	9	14	15	11
Don't know	10	9	14	10	9	14	10	9	13	10	10	14
Using public toilets:												
Very likely	9	8	17	9	8	17	8	7	13	7	6	15
Somewhat likely	22	22	25	22	22	26	20	19	25	19	19	26
Somewhat unlikely	18	19	18	16	16	12	14	15	13	15	15	13
Very unlikely	27	28	21	27	28	20	29	31	19	28	29	19
Definitely not possible	13	13	11	16	16	12	18	19	12	20	21	14
Don't know	10	10	10	10	9	14	11	10	16	11	10	14

Table 3-2.--Knowledge Regarding Human Immunodeficiency Virus (HIV) Transmission from the National Health Interview Survey By Race (Cont'd)

Mode of Transmission	8/87 N=2,303			9/87 N=3,097			10/87 N=3,350			11/87 N=3,333		
		Race			Race			Race			Race	
	Total	White	Black	Total	White	Black	Total	White	Black	Total	White	Black
Working near someone:												
Very likely	5	4	8	3	3	7	3	3	7	3	3	6
Somewhat likely	16	16	18	15	15	18	14	13	22	14	14	12
Somewhat unlikely	17	18	14	16	15	15	15	16	13	14	13	17
Very unlikely	35	36	33	36	37	31	33	34	26	34	35	27
Definitely not possible	18	19	13	21	22	16	26	27	20	27	27	23
Don't know	9	8	14	9	8	13	8	8	12	8	7	15
Food handling/preparation:[8]												
Very likely	11	10	19	10	9	19	9	8	17	8	7	13
Somewhat likely	24	24	29	26	27	20	24	23	26	22	22	23
Somewhat unlikely	18	18	15	16	16	9	16	16	12	16	16	14
Very unlikely	25	26	16	26	26	23	26	27	19	26	27	17
Definitely not possible	11	11	7	11	11	10	14	14	12	16	16	13
Don't know	11	11	15	11	10	20	12	12	13	13	12	20
Mosquitoes or other insects:												
Very likely	10	10	16	10	9	18	8	7	15	8	7	13
Somewhat likely	28	27	36	25	24	30	26	26	25	24	23	31
Somewhat unlikely	12	12	7	12	12	11	10	10	7	11	12	12
Very unlikely	19	19	16	21	22	11	21	22	16	19	20	10
Definitely not possible	10	11	7	12	12	8	14	15	12	17	17	13
Don't know	21	21	18	21	21	22	21	21	25	20	20	22
Attending school w/someone:												
Very likely	3	3	8	2	2	5	2	2	2	2	1	5
Somewhat likely	12	12	11	12	11	15	9	9	10	8	8	11
Somewhat unlikely	17	17	18	17	16	17	14	14	19	13	13	17
Very unlikely	38	40	27	36	38	30	37	38	33	36	38	26
Definitely not possible	20	20	21	24	25	18	28	29	23	31	31	27
Don't know	9	8	14	9	8	15	9	9	13	10	9	14
Living near a hospital or home for AIDS patients:												
Very likely	2	1	5	1	1	3	1	1	3	1	1	3
Somewhat likely	5	4	8	5	4	7	4	3	8	4	4	7
Somewhat unlikely	11	11	12	10	10	15	9	9	14	8	7	13
Very unlikely	41	42	41	40	41	40	36	37	32	38	39	30
Definitely not possible	33	35	24	36	38	25	42	44	31	41	42	31
Don't know	8	7	11	7	6	10	6	5	12	8	7	16

Table 3-2.--Knowledge Regarding Human Immunodeficiency Virus (HIV) Transmission from the National Health Interview Survey By Race (Cont'd)

Mode of Transmission	8/87 N=2,303			9/87 N=3,097			10/87 N=3,350			11/87 N=3,333		
		Race			Race			Race			Race	
	Total	White	Black	Total	White	Black	Total	White	Black	Total	White	Black
Pets or animals:												
Very likely	3	2	8	3	2	8	3	2	8	2	2	7
Somewhat likely	10	9	17	10	10	14	10	8	16	9	8	14
Somewhat unlikely	12	12	12	11	11	12	8	8	8	9	9	10
Very unlikely	30	31	25	30	31	21	30	31	22	29	31	18
Definitely not possible	21	22	13	23	24	17	27	27	20	29	30	23
Don't know	24	24	24	22	21	27	23	23	26	22	21	29

NOTE: - Quantity zero
0 Quantity more than zero but less than 0.5

[a] Dawson, D.A., Cynamon, M., and Fitti, J.E., "AIDS Knowledge and Attitudes: Provisional Data from the National Health Interview Survey: United States, August 1987," Advance Data From Vital and Health Statistics, DHHS Pub. No. (PHS) 88-1250, No. 146 (Hyattsville, MD: November 19, 1987).

[b] Dawson, D.A., Cynamon, M., and Fitti, J.E., "AIDS Knowledge and Attitudes: Provisional Data from the National Health Interview Survey: United States, September 1987," Advance Data From Vital and Health Statistics, DHHS Pub. No. (PHS) 88-1250, No. 148 (Hyattsville, MD: January 18, 1988).

[c] Dawson, D.A., Cynamon, M., and Fitti, J.E., "AIDS Knowledge and Attitudes: Provisional Data from the National Health Interview Survey: United States, October 1987," Advance Data From Vital and Health Statistics, DHHS Pub. No. (PHS) 88-1250, No. 150 (Hyattsville, MD: March 19, 1988).

[d] Dawson, D.A., and Thornberry, O.T.,"AIDS Knowledge and Attitudes: Provisional Data from the National Health Interview Survey: United States, November 1987" Advance Data From Vital and Health Statistics, DHHS Pub. No. (PHS) 88-1250, No. 151, (Hyattsville, MD: March 16, 1988).

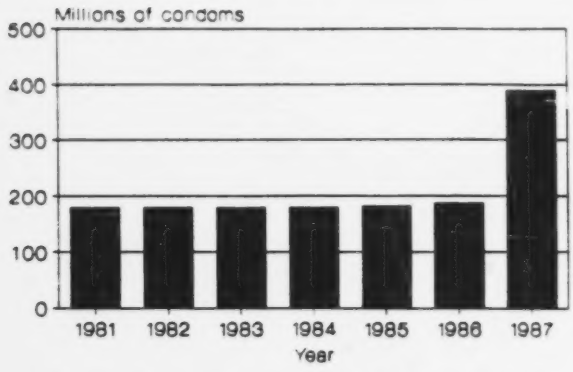
[e] Question wording: "How likely do you think it is that a person will get the AIDS virus from--?"

[f] Question wording: "How likely do you think it is that a person will get the AIDS virus from sharing plates, forks, or glasses with someone who has AIDS?"

[g] Question wording: "How likely do you think it is that a person will get the AIDS virus from eating in a restaurant where the cook has AIDS?"

SOURCE: Office of Technology Assessment, 1988.

Figure 3-1.--U.S. Condom Sales, 1981-1987



Source: U.S. Department of Health and Human Services, Public Health Service, Food and Drug Administration, unpublished data, Silver Spring, MD, March 1988.

By contrast, changes in condom sales rose slightly during 1986 and doubled during 1987 (see figure 3-1). The most likely influence during this period was the publication of the *Surgeon General's Report on Acquired Immune Deficiency Syndrome* in October 1986 and Surgeon General Koop's repeated advice during 1987 to use condoms to prevent HIV infection. Of course, the number of condoms sold or otherwise distributed may differ greatly from the number used.

Black respondents have expressed a greater sense of personal susceptibility than whites (32 vs. 15 percent in 1987), perhaps because a disproportionate number of people with AIDS are black (18). Blacks were also more likely than whites to report changing their personal behavior, in both ineffective ways, such as avoiding homosexuals, and effective ways, such as using a condom. A greater sense of vulnerability and past behavior change suggest that a substantial portion of blacks are concerned and ready to act if given correct information and the appropriate means to effect change.

Adults under age 35 were more likely than older ones to state changes in their personal behavior and, specifically, in their sexual behavior because of AIDS (18). Higher percentages of younger adults reported limiting sex to one partner and using condoms, as well as undertaking ineffective behavior, such as avoiding casual contacts with certain people. But even among those age 18 to 24, only 16 percent said that they had altered their sexual behavior because of AIDS. Another poll limited to single young adults found the younger adults most likely to have increased the number of sexual partners in recent years, but it is not clear what role sampling and study design played in the apparently conflicting results.

In general, few differences were found among respondents by gender or by marital status (18). There were too few data on Hispanics to permit separate analysis. Among regions, Southerners were the least well informed and expressed the greatest desire for more AIDS information. How threatened people felt by AIDS seemed to conform to the prevalence of AIDS in the area, with the greatest susceptibility felt in the northeast.

The analysts of the poll data concluded that as people's perceptions of AIDS transmission became more accurate, fewer were undertaking ineffective behavior to avoid infection. Moreover, decreases in misconceptions also paralleled declines in respondents' support for government restrictions on people with AIDS, such as quarantine or mandatory testing. People presumably at greater risk--blacks, young adults, and single people--expressed more concern and reported more behavior change. Consistent with theories of health behavior, however, accurate or improved knowledge was not necessarily associated with effective changes in behavior.

GOALS OF AIDS EDUCATION FOR THE GENERAL POPULATION

The goals of AIDS education for the general population fall into two main categories: promoting social cohesion and checking

transmission of the virus. Achieving both goals entails correcting misapprehensions and conveying accurate knowledge about HIV transmission. By providing information on viral transmission, educational activities can make people aware of their risk status. People at no risk can be encouraged to continue their current behavior and to support those who are infected or sick. People at high risk can be urged to seek additional information to determine whether they are infected and to change their risky behavior.

A substantial portion of the population mistakenly believe that HIV may be transmitted by blood donation and by everyday activities, without intimate contact. As indicated by survey results and anecdotal accounts, people with more accurate knowledge are less anxious about interacting with people who may be infected. By correcting inaccurate perceptions, one may therefore reduce fear among uninfected people and reduce discrimination against those infected or at high risk. With an estimated 1 to 1.5 million people already infected and viral transmission continuing, individuals and institutions throughout the country will have to deal for a decade or more with HIV infection among adults and children. If stigmatizing and discriminating against people with HIV infections declined, both high-risk and low-risk people might be more willing to take part in surveys to collect data needed to plan public health activities. Moreover, improving knowledge is likely to increase compassion for infected people and lead to more responsible responses to problems. In addition to generating unnecessary fear and discrimination, misperceptions about HIV transmission appear to be impeding certain socially desirable activities, such as blood donation, and recreational activities, such as visiting crowded places and eating in restaurants (18).

To achieve the other goal of AIDS education for the general population, reducing HIV spread, requires stimulating people at high-risk to alter their behavior. Based on behavioral research, the lower perceived barriers (social disapproval, physical discomfort, financial cost, general inconvenience), the more likely people are to use preventive measures (see appendix A). People are also more likely to undertake preventive measures if they feel at risk of HIV infection, realize that preventive means are available, consider these means effective, believe in their own ability to use them, have the skills (social and mechanical) to use them, and feel that the preventive measures have social approval.

EDUCATIONAL INTERVENTIONS SPECIFIC TO AIDS

The results of public surveys indicate that substantial AIDS education has taken place and that learning is continuing to occur, with people absorbing inaccurate as well as accurate information. Much of this education has apparently stemmed from the mass media. Although these sources have successfully raised public awareness of AIDS, their efforts have lacked a specific message and an organized plan. Some information from the media may also be inaccurate. Several State governments have undertaken public educational programs (98), but the most notable formal effort in the United States is the U.S. National Information/Education Campaign, which is being implemented through the CDC.

The effectiveness of these efforts, formal and informal, is not clear, in large part because the program designs have not lent themselves to evaluation. Since people receive information from many diverse sources and are constantly expanding their AIDS knowledge, judging the effectiveness of a particular program requires separating the effects of the program from the effects of other factors. Research methods call for comparing changes within a group that received an intervention (the experimental group) with changes within a comparable group that did not (the control group). Alternatively, researchers may evaluate different educational strategies by comparing

changes among groups that received different interventions. Neither of these research designs has been applied to AIDS education for the U.S. general population. This section briefly describes the CDC campaign and campaigns in other developed countries, some of which have been evaluated.

The U.S. National Information/Education Campaign

Operating within the CDC since mid 1987, the National AIDS Information and Education Program is intended to add a national dimension to reduce the incidence of AIDS by changing personal behavior and the social norms that influence that behavior (184). The campaign has five objectives (204):

- o to disseminate detailed factual information on AIDS transmission,
- o to clarify misconceptions and to reduce fear,
- o to support ongoing State and local efforts,
- o to provide a supportive environment for AIDS education and for people with AIDS, and
- o to help to develop a national consensus on AIDS education.

The program consists of seven components: public service campaign, national mailing, minority outreach, national AIDS hotline, national AIDS clearinghouse, corporate outreach, and research.

The first phase of the public information campaign began in the fall of 1987 with a national media campaign concentrated in October. On October 1, the CDC distributed public service announcements to the media: 38 for television, 8 for radio, and 6 for print (204). A brochure prepared by the CDC was also available upon request. During the fall campaign, staff met with national and local organizations, community leaders, and volunteers; a total of 31 meetings with representatives of community-based organizations were held in 28 cities, and 12 forums with leaders of interested constituencies (such as black Americans, Hispanic Americans, and religious media) were conducted (184a).

In developing public service announcements for the fall 1987 campaign, the CDC and Ogilvy & Mather, the public relations firm that prepared the campaign, convened several focus groups, but because of limited time and funding, did not attempt to pilot test the messages (204). Since the same messages were distributed throughout the country, comparisons could be made only about people's knowledge and behavior before and after the fall campaign. Given the many other sources from which people may gain information on AIDS, this approach does not permit one to isolate the effects of the CDC's efforts. Under contract to the CDC, Macro Systems is in the process of studying how to evaluate the CDC's information/education efforts (204).

In August 1987, NCHS, as part of its National Health Interview Survey, implemented a survey of AIDS knowledge that was fielded monthly from August through December among a representative national sample of the U.S. population (50,51,52,53,217). These results identify areas of accurate and inaccurate perceptions and could guide future phases of the campaign (see table 3-2). Although the survey has excluded questions on behavior related to HIV transmission, NCHS is exploring the incorporation of behavioral questions into a separate study (217).

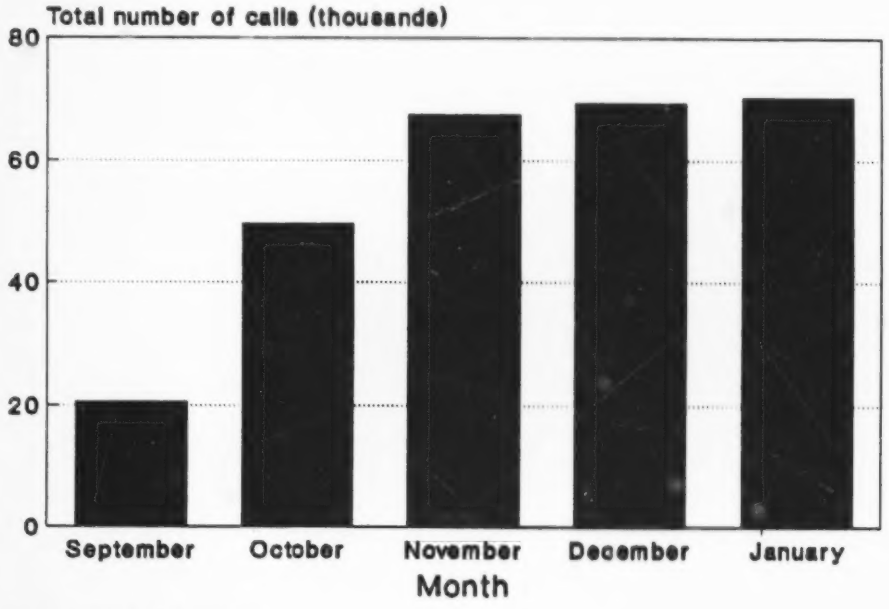
Some measures of the campaign's process are available. Between September and October 1987, operator-assisted calls to the National AIDS Hotline more than doubled, from about 20,000 to over 49,000 (146). This change cannot be attributed solely to the CDC campaign; since the number of lines increased from 11 to 44 on Oct. 1, 1987 (204), the increased number of calls may have reflected the improved capability of the system to handle callers rather than increased interest among the U.S. population.

Operator-assisted calls to the hotline continued to increase throughout the following three months; however, they exceeded 70,000 in January 1988, an amount considered peak capacity during key calling hours (see figure 3-2) (204). Although television broadcasters began to use the CDC's public service announcements in October, their use in number and dollar value more than doubled in November and continued to grow in December. During the first four months of the campaign, radio and television broadcasters on major networks and in the top 75 local markets aired public service announcements valued at about $6 million (figure 3-3) (204). Radio and television networks donated about 65 percent of this time, and about 55 percent of the announcements appeared during prime-time viewing hours. Use of the announcements varied greatly by markets: from October through January, Philadelphia aired 209 spots valued at $175,000; Washington, D.C. aired 12 spots valued at $2,000; and Los Angeles used only 1 valued at $75. Using data already collected, the CDC could gain some insight into people's response to the public service announcements by examining the relationship between the number and dollar value of spots run in a local market and hotline calls from area codes in that locality (204).

During the quarter including the October campaign, AIDS information conveyed by the media apparently fell (see figure 3-4).[2]

2 The Centers for Disease Control conducted a computer search of NEXIS Library for stories pertaining to AIDS. NEXIS contains approximately 150 journals, newspapers, magazines, newsletters, wires, financial information, and medical information within its library.

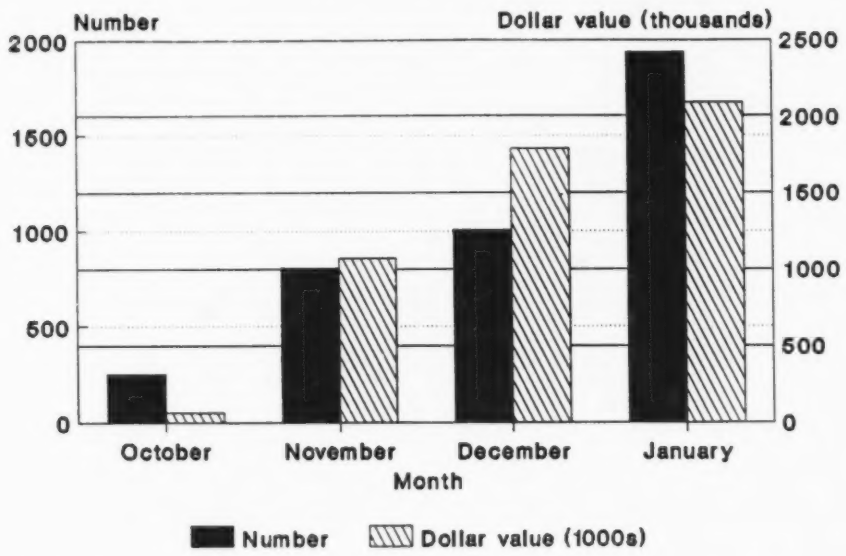
Figure 3-2.—Calls to the National AIDS Hotline, September 1987-January 1988[a]



[a] Operated-assisted calls

SOURCE: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, unpublished data, Atlanta, GA, May 11, 1988.

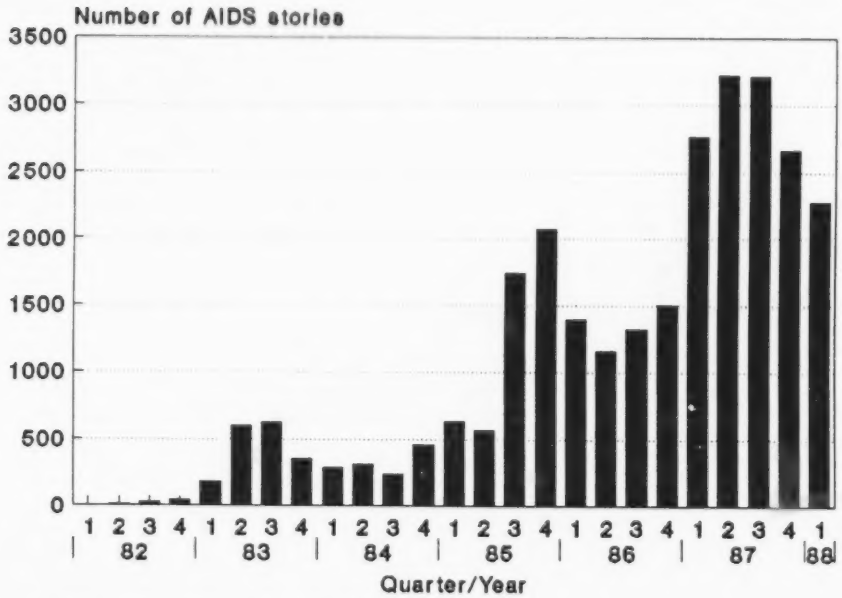
Figure 3-3.--CDC PSAs Aired on Television, October 1987-January 1988[a]



[a]Top 75 markets

SOURCE: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, unpublished data, Atlanta, GA, May 11, 1988.

Figure 3-4.--News Media Coverage of AIDS[a]



[a]Based on computer search of NEXIS

SOURCE: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, unpublished data, Atlanta, GA, April 1988.

The decline was especially striking because it ended continuous increases from spring 1985 and did not appear to reflect seasonal trends. Since the content of these stories has not been analyzed, it is not known whether this change bore any relationship to the AIDS campaign and whether any change occurred during this period in the portion of stories with accurate vs. inaccurate information. During the period from October 1987 to March 1988, the highest number of stories on AIDS appeared during the middle two weeks of October (16).

Unlike the situation in countries that have government stations, U.S. agencies depend on decisions of private managers about whether and when to schedule public service announcements. This problem exemplifies the admonition that the effectiveness of an educational program depends not only on its content, but also on its implementation (74,207). At a minimum, the message must reach the intended audience to have an effect. If the media are not airing public service announcements at appropriate times or with adequate frequency, the Government could pay for the messages to be given at specific times. Although paying commercial rates is clearly more costly per message used, if payment increases the audience receiving the message, the cost per person reached may be much lower and the entire program more effective.

The CDC and the Surgeon General have prepared a brochure that will be mailed starting the end of May 1988 to every U.S. household. The brochure provides information about how HIV is and is not transmitted and urges support for people with AIDS (193a). During 1988, the campaign's messages will emphasize women at risk, sexually active adults, teenagers, and parents (194).

During June 1988, NCHS will include in its National Health Interview Survey questions relating to the brochure and public service announcements. The survey will query respondents about whether they are aware of the public service announcements or the brochure; whether they have read the brochure; and how they used the information. Questions also pertain to their knowledge of AIDS and HIV, use of blood tests for HIV antibody, risky behaviors, willingness to participate in a national seroprevalence study, and trust in information from Federal public health officials. This information will permit policymakers to determine the extent to which messages from the campaign are reaching the populace. In addition, people's reactions to blood testing and their trust in Federal public health officials can guide approaches to conducting seroprevalence surveys and to future information dissemination.

Campaigns in the United Kingdom and Australia

In 1986, the government of the United Kingdom began an AIDS advertising campaign that is still continuing (25). The aim of the campaign is to educate people about the facts and myths of AIDS, to offer advice and reassurance, and to influence the climate of opinion so that ultimately people at risk modify their behavior. The first year's campaign consisted of three phases: advertising in the national press; extensive television and press editorial coverage plus low-level press advertising; and a press, poster, and television campaign combined with editorial television and press coverage, a youth campaign, and delivery of booklets to all households.

The government arranged for an evaluation of the first year's campaign. Since the campaign used the same approach throughout the country, it was possible only to track changes that occurred over time, but not to isolate the effects of the campaign. On the basis of baseline and subsequent surveys, over the year adults who were aware of any recent AIDS information or who had discussed AIDS more than doubled (25). About 80 percent of the general population and of youth recalled the campaign's advertisements, the highest of any such campaign in Britain. Substantial improvement occurred in people's knowledge about specific routes of HIV transmission and

the desirability of condom use, but only slight declines in the misconception that blood donation can transmit HIV. Surveys found little attitudinal change toward people with AIDS and little behavioral change in the number of sexual partners or in condom use. Consistent with previous trends, however, homosexual behavior had continued to change, with less unprotected anal intercourse and fewer sex partners.

In 1987, the government of Australia launched an educational program to provide information to motivate the public to avoid risky practices (170). The program consisted of a television announcement, which portrayed great danger; pamphlets distributed to physicians, pharmacists, and health and social service agencies; advertisements on radio and in print that were targeted to specific groups; and a hotline for counseling.

The results of interviewing urban Australians before and during the campaign are consistent with the campaign's correcting misconceptions about how HIV is transmitted, such as through public toilets, but there was no change in the belief that blood donation posed a risk. Knowledge that condom use decreases the risk of HIV infection started at a high level (92 percent) and increased (to 95 percent). Men reported more routine condom use after the campaign began, and 44 percent of the population reported that the campaign had changed their attitudes or behavior, with higher figures among young adults and single people.

OTHER PUBLIC EDUCATION PROGRAMS

Several programs that have used mass media to try to promote health-related behavioral change may provide lessons for AIDS education. This section reviews experience with programs that have been associated with behavioral changes in three areas: cardiovascular risk reduction, smoking cessation, and control of syphilis. Researchers attempting to reduce cardiovascular risk have designed and implemented well-designed studies that permit analyzing the effectiveness of the programs undertaken. Programs to curtail smoking have gained some prominence, for their successes as well as their failures. U.S. efforts to control syphilis may provide insights into effective strategies for AIDS education, since both are sexually transmitted diseases.

Some other programs have had less success in fostering behavioral change in three other health-related areas: use of seat belts, use of family planning techniques, and use of alcohol and other drugs. In general, programs in these areas have resulted in changes in knowledge and attitudes, but not in behavior. Several programs to increase voluntary seat-belt use in the United States and other countries have failed to achieve even modest success (103). An information program in Sweden during the 1970s, however, did lead to increased seat-belt use.

Mass media programs to promote the use of family planning techniques have had limited success in changing people's behavior (173). It was notable that television messages increased awareness most and that people generally reacted favorably to the advertisements. Advertisements in the print media, however, had little effect.

During the early 1970s, several educational efforts were undertaken to discourage drug abuse, particularly among adolescents and young adults (103). In one program, the Advertising Council, working with the National Institute of Mental Health, developed public service announcements to combat drug use. The announcements were consistently aired outside prime-time hours, did not expose target groups to specific messages, failed to take account of social networks and sources of information credible to drug users, and may have erred in containing strong fear messages (103). There is a consensus that efforts during the 1970s failed to influence drug use, whether among youth or adult women. Programs specifically focused on al-

cohol use produced little or no change in behavior, although awareness of alcoholism increased (103).

Instead of indicating that mass media approaches cannot change behavior in this area, campaigns that did not achieve an effect may exemplify only approaches that were poorly designed or implemented (74,207). At least one program to curtail alcohol use and driving produced attitudinal changes (103). As Wallack emphasizes, programs that address the community as well as the individual are more likely to succeed, and efforts to curtail drunk driving are occurring in an environment where media advertising and television programs promote unsafe practices (209,137).

Certain characteristics of HIV infection described above that make behavior change and its evaluation difficult apply to some of these other public health programs. In all cases, ongoing media attention and public interest impede isolating the effect of a particular educational program.

Cardiovascular Risk Reduction

Perhaps the best designed studies of interventions that use mass media come from programs to reduce the risk of cardiovascular disease among entire communities. Comparing changes in three similar communities, Stanford researchers found that over a 3-year period during the early 1970s, risk of cardiovascular disease[3] fell and remained significantly lower in the two communities that had received educational interventions (69). Mass media alone successfully promoted behavior, particularly nutritional behavior, to lower cardiovascular risk about 25 percent. Combining mass media with face-to-face instruction achieved even greater changes (about a 30-percent reduction), largely because of a greater reduction in smoking. In addition to providing information and attempting to affect attitudes and motivation, mass media materials were developed to teach specific skills and to reflect the characteristics of the target audiences (121). With greater use of health professionals and less use of media, a project in Finland during the same period achieved comparable risk reduction (69).

The Stanford researchers concluded that sustained community-based education can achieve behavior change for risk reduction, but the optimal mix of approaches to conduct an education program has yet to be defined. Research is continuing in five larger communities, with the addition of youth education, and interim results support the effectiveness of the educational interventions (121). Projects are also underway in other States (Rhode Island, Minnesota, Pennsylvania) and other European countries (Switzerland, Germany, Portugal, Italy, and Yugoslavia) (103).

Although this body of research supports the effectiveness of community-based programs using mass media, cardiovascular risk reduction differs from reducing HIV transmission in certain ways that may well influence the success of educational programs (103). Because cardiovascular disease is so much more prevalent than AIDS, people are more likely to know someone like themselves who has had cardiovascular disease and hence may be more likely to feel susceptible to the disease. In addition, behaviors linked to cardiovascular risk, such as diet, smoking, and exercise, are easier to discuss and acknowledge publicly than behaviors associated with HIV infection, which relate to sexual behavior, IV drug use, and reproduction. Finally, for several years the social environment has been supporting changes in behavior to reduce cardiovascular risk. Similar social support may be building for changes in drug use. There is no such consensus in the United States about sexual behavior, however, and messages in the media and in society generally regarding sexual behavior often conflict with behavior to reduce the risk of HIV infection.

3 The researchers measured cardiovascular risk by means of a composite score that incorporated factors such as plasma cholesterol, systolic blood pressure, relative weight, age, and sex.

Reduction of Smoking

Over the past generation, U.S. social norms regarding smoking have changed dramatically. Although the role of mass media and anti-smoking campaigns in this development is not clear, a review of 40 programs involving the mass media concluded that large-scale campaigns not only improved people's awareness, knowledge, and motivation, but also reduced smoking prevalence (75). Since few studies incorporated comparison groups that received no intervention, the review compared the effects of different programs, with the results from face-to-face clinics as the ultimate (highest) standard for success and the results from a self-help program of the American Lung Association as a lower, more reasonable standard by which to judge mass media programs.

In the late 1960s, an advertising campaign using the Fairness Doctrine was undertaken to counter advertisements that promoted smoking. The results suggest that public service announcements can be effective (75). That successful campaign included the following features: widespread dissemination (reach); high frequency, including some during prime-time broadcast hours (frequency); endurance, in this case three years (duration); and variations in the message. The high frequency probably reduced the opportunity for the audience to avoid the message, and presentation of opposing views (the tobacco industry's vs. health agencies') probably increased discussion of the issue.

Intensive media campaigns in the United States and other developed countries have lowered the prevalence of smoking as much as good self-help manuals, such as those of the American Lung Association; both approaches have led people to quit smoking at twice the rate of the smoking population without such programs (75). Adding community activities, in turn, appears to double the effectiveness of media programs alone. Self-help clinics that are broadcast on television or radio are about as effective as self-help manuals. Combining media self-help clinics with printed material raised their effectiveness, and adding group discussion raised it even more. None of the interventions that used mass media reduced and maintained smoking prevalence as well as face-to-face clinics. Mass media interventions, however, would be more cost effective than face-to-face clinics if, as Flay suggested, mass media approaches can reach and change the behavior of more people for the same or lower cost (75).

Control of Syphilis

During World War I, 13 percent of the men drafted in the United States were infected with either syphilis or gonorrhea (24). Although a diagnostic test could detect syphilitic infection, the main treatment, a drug containing arsenic, was toxic and necessitated prolonged administration.

The campaign undertaken by the military against venereal disease centered on promotion of sexual abstinence and repression of prostitution (24). Posters, films, and other material warned soldiers about the health risks of prostitutes, and more than 20,000 women were quarantined. Although the efficacy of condoms in preventing syphilis was recognized, the military did not provide them to the troops because it was feared that such a step would encourage sexual relations. Instead, soldiers were required to undergo disinfectant treatment after sexual exposure. Moreover, soldiers who contracted a sexually transmitted disease lost their pay and were subject to court-martial (23). Despite these measures, rates of syphilis remained high during the war.

During the late 1930s, State and Federal governments developed programs to detect and treat syphilis in its early stages (24). Diagnostic facilities and clinics increased, and States began to require applicants for marriage licenses to be tested for syphilis, despite the recognition that intercourse before marriage was common. Although premarital testing became compulsory in most States, 25

percent of the people who tested positive were actually uninfected, but still underwent treatment. By 1978, only about 1 percent of all tests positive for syphilis were conducted as part of premarital testing.

During World War II, the military not only undertook an educational program, but also provided condoms and sought to treat soldiers rapidly without punishing them (24). Rates of syphilis infection fell during the early 1940s, a decline that accelerated with the introduction of penicillin from late 1943 (23). Even with the availability of effective treatment, however, the disease has persisted and has begun to increase in prevalence during the past decade.

Like syphilis during the early part of this century, AIDS has raised issues of sexual behavior about which there are diverse and conflicting views in U.S. society. Also similar are the populace' widespread fear of contagion and its stigmatization of infected and sick people (24), mainly people from groups historically subjected to discrimination. The experience with syphilis indicates that intensive education and provision of condoms during World War II protected soldiers from infection, but that attempts during World War I to prevent infection through abstinence, fear, and appeals to morality were not successful (24).

CONCLUSIONS

What is known specifically about AIDS education and generally about public health campaigns indicates the considerable capability of the mass media. In only a few years, the general population has gained a great deal of knowledge about AIDS, most of it through television (103). Furthermore, studies of other public health campaigns have shown that education through the mass media can change people's health-related beliefs and behavior to a limited extent. It is also clear that an educational program increases its effectiveness by combining use of mass media with interpersonal communication and by helping people develop skills to implement their new beliefs and motivations, through mass media or supplementary approaches (74). The media set an agenda for society; their coverage can heighten public awareness of an issue such as AIDS and stimulate people to ponder and discuss it (208). The media can provide factual information that reduces misconceptions and fear about HIV transmission and that alerts people with risky behaviors to their susceptibility and directs them to more detailed information. The media can also legitimize efforts and attitudes to reduce the stigma associated with HIV infection and to prevent further spread of HIV.

Although past experience indicates that public health campaigns directed to the general population can achieve change, it is not clear why some programs have been more effective than others (74). Which elements and combinations of elements are responsible for successful campaigns is the subject of continuing research, for example, in the area of cardiovascular risk reduction. To identify successful program elements requires that programs be designed to isolate the effect of different elements and that evaluations be conducted. Such an approach could be applied to AIDS education programs. For example, in cooperation with States and localities, the CDC could systematically vary the content or dissemination of messages within a State or across States. Surveys before and after the interventions, perhaps as part of NCHS' current AIDS surveys, could evaluate their relative effectiveness. These insights could then be used to increase the effectiveness of subsequent phases of the campaign.

A necessary condition for effective education is that the message reach the intended audience, a precondition that depends on the number of messages, when and how they are presented, and the duration of the campaign. Relying on public service announcements increases uncertainty about this aspect of a campaign, because media managers rather

than campaign organizers control the frequency, timing, and duration of the message. Although the anti-smoking campaign illustrates that public service announcements can effectively disseminate information, legal requirements related to the Fairness Doctrine underlay media use of that advertising. Existing data on the CDC's fall campaign and data that NCHS plans to collect about the national mailing can be analyzed to gain insight into the audience reached by these messages. For some aspects of AIDS education, notably condom use, commercial interests coincide with public health concerns and can help communicate certain messages to prevent HIV infection (103).

One aspect of reaching the intended audience for AIDS education entails tailoring the content and dissemination of messages so that they reach people at high risk. That AIDS has disproportionately affected blacks and Hispanics argues for special measures to reach them. Television may offer particular opportunities. Blacks, Hispanics, and people from lower socioeconomic groups have generally recalled better those messages delivered through television (119,178). Audiovisual media are especially important means of reaching minorities, since minorities have been more likely to obtain health information through these sources than through print media (22). Reaching people from different ethnic backgrounds may also require the development of messages that are sensitive to the language and culture of specific communities. In many of its activities, the CDC's national information and education program has undertaken special efforts for minorities. Few studies, however, have evaluated programs of AIDS education for minorities in the general population or with risky behaviors (see chapter 2).

Finally, but very importantly, one must consider the environmental context of AIDS education (208). Like any public health problem, HIV transmission and its prevention depend not only on individual behavior but also on community norms and social policies. As noted earlier, the tone of mass media coverage can improve individual and social attitudes towards HIV infection and support preventive behavior and compassion. Relevant messages, however, pertain to more than specific matters regarding AIDS. U.S. society, advertising, and television programming exploit sexual insecurity (208). To support behavior consistent with reducing HIV transmission, the media and advertisers could alter their depiction of sexual behavior, as they did for smoking and are doing for alcohol use. Messages from mass media also have the potential to generate greater demand for certain services, such as drug treatment and HIV testing.

Since there have been few public service announcements about AIDS over the course of the epidemic, people must have been acquiring information from other aspects of the media. Greater insights into the role that news and entertainment media have played in shaping public perceptions and behavior about AIDS might help to guide future policies regarding AIDS education.

Appendix A: RECOMMENDED BEHAVIOR CHANGES AND PRINCIPLES OF HEALTH-RELATED BEHAVIOR

In response to the AIDS epidemic, the Centers for Disease Control (CDC) and other public health officials have developed recommendations to reduce further HIV transmission. Researchers at the CDC and elsewhere have revised these guidelines as knowledge of HIV and its epidemiology have progressed. As background to the discussion of AIDS educational programs, this appendix briefly presents the major recommendations that have been made. Also relevant as background for AIDS education are general principles of health-related behavior that have been developed for other educational programs. The points that seem most relevant to AIDS education are summarized in the second section of this appendix.

RECOMMENDED BEHAVIOR CHANGES

Knowledge of how HIV is transmitted and studies of how people have become infected have identified behavior that increases and decreases the chance of infection. In general, one prevents HIV infection by avoiding contact with infected blood and other bodily fluids, especially semen and vaginal fluid. These actions prevent an uninfected person from contracting the infection and prevent the virus from spreading from an infected to an uninfected person. A goal of AIDS education is to prevent HIV transmission by promoting the adoption of these preventive behaviors:

Sexual behavior:

- Reduce the number of sex partners that may be at high risk of HIV infection (48,88). Least risky is monogamy with one faithful partner or abstinence. Reducing the number of partners and contacts and knowing their sexual history will lower but not eliminate the risk of viral transmission.
- Use condoms with a spermicide effective against HIV throughout sexual relations, unless both partners are known to be uninfected (70). The use of condoms appears to reduce but not eliminate viral transmission (88).
- Avoid anal intercourse, because subsequent trauma and bleeding may facilitate transmission of the virus (48).
- Avoid anal-oral and oral-genital contact (48).
- Seek testing to determine infection status if one is at risk of infection because of past behavior (181). This advice applies particularly to women who may become pregnant. Part of a testing program entails counseling about positive and negative results and preventive behavior.
- Use only sterilized instruments for skin piercing, such as ear-piercing, tattooing, and acupuncture (181,221).

Intravenous drug use:

- Seek treatment for drug use so that IV injection is reduced or eliminated.
- Do not share needles or other equipment that may have residues of infected blood (181).
- Clean any shared needles or other equipment with bleach to kill the virus.

Blood transfusions:

- Do not donate blood if one has clinical or laboratory evidence of HIV infection.
- Do not donate blood if one is at high risk of HIV infection because of any of the following: a man who has had sex with another man since 1977; a person who is or has been an intravenous drug user; a person who emigrated since 1977 from a country where heterosexual activity seems to play a major role in

HIV transmission; a person with hemophilia who has received clotting factor concentrates; a person who has engaged in prostitution since 1977; and a person who has been the sexual partner of an infected person or a person in any of the above high-risk categories (179,181,198,199).

In addition to suggesting behavior to prevent HIV transmission, studies of the AIDS epidemic have identified behaviors that have not been associated with infection. Another goal of AIDS education is to relieve anxiety among people at low or no risk by conveying information about behaviors that have not transmitted the virus:

- o People have not become infected through casual contact, including routine activities connected with sharing a household or workplace with people with HIV infection (180).
- o People cannot become infected by donating blood, because new sterile equipment is used for each donor (176).
- o There is no evidence that insects spread HIV infection (174).

THEORETICAL BASES FOR AIDS HEALTH EDUCATION

Social scientists seeking to explain and modify individuals' voluntary health behavior have increasingly broadened their perspectives from individuals to encompass the social environment. Models run the gamut from those linking behavior with individual attitudes and beliefs to those explaining the diffusion of innovations, those incorporating the influence of social networks, and those based on marketing principles. Although no unified theory exists to guide a specific program of health education, several behavioral models contain elements relevant to the changes that are needed to check HIV transmission and to reduce anxiety and discrimination.

- o The more individuals perceive that they are at risk of contracting a condition, the more likely they are to engage in behavior to prevent it (101).
- o An even stronger factor in explaining preventive health behavior are the barriers that people perceive, such as physical, economic and psychological costs (14,101).
- o Also important are the perceived benefits or effectiveness of the intervention (101). Receptive attitudes towards an intervention can be promoted by stressing potential benefits, such as peace of mind from using condoms (165).
- o Exposing people to cues about the availability of a health procedure and encouragement to use it has been associated with greater subsequent use (14).
- o After individuals have decided to adopt certain health behavior, they require the skills, both social and mechanical, to carry out the new behavior (85). Rehearsing or practicing the desired behavior can help to convey the required skills (11,160).
- o Individuals' perceptions of the social approval or disapproval accorded to specific actions influence their behavior (5). Support and approval from friends, community, and society at large reinforce people's intention to change their behavior (11,85).
- o The stronger individuals' beliefs in their ability to undertake or maintain a health-related behavior (self-efficacy), the more likely they are to undertake that behavior (11).
- o Using fear as punishment to weaken unhealthy behavior is unlikely to produce the desired effect. The use of fear is most likely to be effective if the desired behavior is reinforced by a reduction in the level of fear (102). This approach entails offsetting fear-arousing information by presenting people actions or skills that they can use to lower their risk (165).
- o People are more likely to act on information if they perceive the source as

credible, a belief that relates to the expertise and trustworthiness of the source material (14a,144,165). To be credible, messages must acknowledge the beliefs and values of the target audience. Prevention messages also gain credibility if they clearly acknowledge the disadvantages of the intervention (165). Health messages conveyed in the course of a patient's treatment acquire a medical imprimatur that may increase their credibility. By contrast, if people feel castigated, they are likely to distrust the bearers of the information and to ignore the message.

- o Evidence that behavior may change attitudes supports examining the possibility of altering behavior through structural interventions (14). The inconsistency between alterations in attitudes and behaviors undercuts using attitude change to measure behavior change (207).
- o People learn by modeling their behavior on that of others with whom they identify. Opinion leaders and peer counselors can serve as role models (11).

Several factors pose particular barriers to persuading people to alter the behaviors that transmit HIV. Although perhaps not unique to AIDS or HIV infection, these factors do make behavior change difficult to achieve.

First, the behaviors that are responsible for HIV transmission and that people are called upon to change relate to sexual, reproductive, and addictive activities. Since these activities in turn have profound psychological, physical, and social implications, people may face great distress in changing these behaviors. These are sensitive areas, often considered more appropriate for private decisionmaking than public policy (15). Nor is there a consensus on social values in these areas, especially regarding sexuality and reproduction. This heterogeneity hinders the coalescing of public opinion behind certain educational strategies and reduces social support to reinforce desired behavior change in individuals.

In addition, AIDS and HIV infection are highly stigmatized conditions (15). Perhaps this situation stems from the fact that most AIDS cases have been concentrated among groups considered marginal and discriminated against by society, namely homosexuals and IV drug users and more recently, prostitutes and prisoners. Even racial and ethnic prejudice may play a role in furthering the stigmatization of people with AIDS. The fact that blacks and Hispanics have a disproportionate share of AIDS cases may reinforce existing racial and ethic prejudice. People who are infected or even suspected or being infected may face being ostracized by their families and friends, losing their jobs, having difficulty finding housing or selling their houses, and even obtaining medical care. Such discrimination poses a powerful barrier discouraging people with high-risk behaviors from determining whether they are infected and sharing this information with others.

Also impeding behavior change are the threat of what is known and the uncertainty of what is not known about HIV infection and AIDS (15). Since a high percentage of infected people have developed serious illnesses and died, those who acknowledge being infected face the prospect of an increasingly debilitating disease likely to end in dependence and death. Unlike most other sexually transmitted diseases, and certainly fatal ones, medicine so far can offer no cure, only palliation and perhaps postponement of the worst symptoms. Scientists have made phenomenal strides in only seven years in identifying the cause of AIDS and the mechanisms for viral transmission. Knowledge is constantly evolving, however, and much uncertainty remains. Both infected and uninfected people are being called on to make behavioral changes for life. The immediate benefits to be gained from changing behavior may be limited, especially for people who are already infected. Yet over time, eliminating risky behavior offers infected people the opportunity to protect their loved ones and offers uninfected people the enormous benefit of remaining uninfected.

Appendix B: AIDS EDUCATION FUNDED BY THE FEDERAL GOVERNMENT

Table B-1.--AIDS Education Programs Funded by Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA), May 1988[a]

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
National Institute of Mental Health:[bcd]					
AIDS Extramural Research Grants	Columbia University New York/John Martin	$500,490, FY87	5/1/84 through 4/30/92	Title: Mental Health Effects of AIDS on At-Risk Homosexual Men. Target group: at-risk homosexual men in New York City. Intervention: HIV antibody testing.	Will study whether or not HIV antibody testing leads to changes in sexual behavior, substance use, and health habits.
	Cornell University Medical College/Samuel Perry	$369,319, FY87	9/30/86 through 8/31/89	Title: Psychoeducational Interventions After HIV Test. Target groups: bisexual men, substance abusers, and female sexual contacts of men in risk groups. Interventions: HIV antibody testing, and 1 of the 3 following interventions (1) 7 weekly cognitive/behavioral sessions; (2) 7 weekly cognitive/behavioral sessions used with a videotape program; or (3) standard session involving a pamphlet, community referral, and a question and answer period. Subjects will be randomized to 1, 2, or 3 after receiving test results.	Outcomes will be assessed 2 and 6 months after antibody notification. Impact on behaviors, coping, AIDS and HIV knowledge are a few of the measures that will be assessed for each intervention.
	Graduate School of CUNY/Gregory Herek	$112,806, FY87	9/30/87 through 8/31/89	Title: Public Knowledge, Attitudes, and Behavior Concerning AIDS. Target groups: general population with special emphasis on adolescents, blacks, and Hispanics. This project will gather information through a national survey and social-psychological questionnaires.	Areas of knowledge and ignorance will be identified and recommendations will be made as to effective AIDS educational approaches. A longitudinal analysis of trends in attitudes, beliefs, and behaviors will be completed.
	Memorial Hospital for Cancer and Allied Disease/ Karolynn Siegel	$172,745, FY87	9/1/87 through 8/31/92	Title: Explaining Risky and Safe Sex Practices Among Gay Men. Target groups: HIV positive gay men, HIV negative gay men, gay men who have not been tested. Interventions: unstructured group interviews and unstructured individual interviews	Will compare the data between those people participating in unstructured group interviews and those participating in unstructured individual interviews.

Table B-1.--AIDS Education Programs Funded by Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) (Continued), May 1988

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
	University of California, San Francisco/ Thomas Coates	$123,600, FY87	9/30/86 through 8/31/89	Title: Psychological and Behavioral Responses to HIV Antibody Testing. Target groups: homosexual/bisexual men, IVDUs, heterosexual/bisexual women. Interventions: HIV antibody testing, health education.	Will examine the effect of HIV antibody testing on AIDS knowledge, anxiety, susceptibility perceptions, intentions to change, and actual changes in sexual and drug use behavior. Uses a longitudinal design with 2 cohorts (San Francisco cohort of 683 homosexual men who have been surveyed every 6-months since May 84 and a cohort of 1200 people (e.g., IVDUs, homosexual/ bisexual men, and heterosexual/bisexual women) who will be surveyed before and after testing and at 1-, 6-, and 12-months following testing). Will examine differences among test takers vs non test takers as well as differences among risk groups.
	University of California/ Vickie Mays	$137,405, FY87	8/1/87 through 7/31/89	Title: AIDS Risk Reduction Among Black and Gay and Bisexual Men. Target groups: black homosexual and bisexual men. 1,000 members of the target group will answer a questionnaire. Also, 100 black homosexual and bisexual men who are of low socio-economic status will be interviewed. Purpose: document current and past levels of risky sexual behavior and identify methods to produce risk-reduction.	N.A.
	University of Mississippi/ Jeffrey Kelly	$40,371, FY87	7/15/86 through 12/89	Title: Behavioral Training to Reduce AIDS At-Risk Activities. Target group: at-risk homosexual men. Intervention: 12-session behavioral training program to reduce high-risk sexual behaviors; it includes self-management, assertion and skills training as well as risk-reduction education. Both experimental and control groups will eventually receive this intervention.	Subjects are randomly assigned to control or experimental group. Prior to the intervention, each member of the experimental group will be assessed as to self-reported behaviors. Subjects will then be compared to control subjects in terms of risk behavior. Control subjects will then receive the intervention, and all subjects will assessed at 1 year follow up.
Center for AIDS Prevention Studies	Center for AIDS Prevention Studies/Ruth Greenblatt	$2.4 million for the total center grant.	9/1/87 through 8/91.	Title: AIDS Prevention for Sexually Active Adolescents. Target groups: 1,450 sexually active adolescent females aged 14 to 20 from the Planned Parenthood Clinic in Santa Cruz. Interventions: traditional health education technique vs. marketing/social learning intervention.	Will conduct a prospective randomized, single-blind controlled experiment comparing the effectiveness of the 2 methods for preventing HIV transmission.

Table B-1.--AIDS Education Programs Funded by Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) (Continued), May 1988

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
	Center for AIDS Prevention Studies/Edward Morales	$2.4 million for the total center grant.	9/1/86 through 2/90	Title: AIDS Prevention Through Community Action Networks for Blacks and Hispanics. Target groups: 60 black and 60 Hispanic community leaders from Oakland and San Francisco. Interventions: workshops vs. monthly newsletters. Subjects randomly assigned to either of two groups.	N.A.
	Center for AIDS Prevention Studies/James Sorenson	$2.4 million for the entire center grant.	9/1/86 through 8/31/91	Title: AIDS Prevention with Drug Abusers Completing Residential Treatment. Target groups: 114 seronegative IVDUs enrolled in outpatient phases of residential treatment in Walden House in San Francisco. Interventions: Subjects will be involved in a randomized clinical trial where 57 will receive a 10-hour risk reduction training workshop and 57 will receive a packet of educational materials.	Subjects will be interviewed before the workshop, after the workshop, and at 6 and 12 months after the intervention to assess knowledge about AIDS, risk behaviors, and exposure to HIV.
	Center for AIDS Prevention Studies/James Sorensen	$2.4 million for the total center grant.	9/1/86 through 8/31/91	Title: Methadone Maintenance Impact on Sharing of Body Fluids by Seropositive Drug Abusers. Target groups: Seropositive IVDUs enrolled in a treatment program at Substance Abuse Services. Interventions: assigned randomly to standardized treatment program (abstinence-oriented focus) compared to public-health-oriented treatment (focus on diverting seropositives from sharing needles).	Pre-measures will be taken at admission to program and post-measures will be taken at 3- and 12-month followup.
	Center for AIDS Prevention Services/David Gibson	$2.4 million for the total center grant.	9/1/87 through 8/31/91	Title: Clinic-Based Outreach to IV Drug Users and Sexual Partners. Target groups: 180 seronegative IVDUs in heroin detoxification at San Francisco General Hospital, 180 "community" drug users recruited with vouchers, and 180 female sexual partners of IVDUs who do not inject drugs. Interventions: Members will be randomly assigned to a counseling/problem-solving condition or an information only control condition. Antibody testing will also be done.	Will look at knowledge about risk-reduction, acceptance of risk-reduction guidelines, self-reported risk behaviors, perceived AIDS threat, and communication skills. Antibody status will serve as a behavioral measure.

Table B-1.--AIDS Education Programs Funded by Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) (Continued), May 1988

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
Center for the Biopsychosocial Study of AIDS	Center for the Biopsycho-social Study of AIDS/Dale Chitwood	N.A.	N.A.	Title: HIV Prevalence and Risk Reduction in a Population of IV Drug Users. Target groups: 150 street IVDUs in Miami, Florida. Interventions: Will determine antibody status of IVDUs and determine frequency of use, length of use, needle-sharing habits, sexual activities, and use of "shooting galleries." 50 seronegative individuals will be randomly divided into a control (to receive a pamphlet on how AIDS is transmitted and the role of needle sharing) and an experimental group (to receive an intensive health education course teaching ways to lower risk--avoid sharing needles, use new needles, clean a needle, and engage in safer sex--as well as how AIDS is spread).	Will compare the experimental and control groups' risk behaviors and seroconversion rates over time; will examine relationship between seroconversion rates and changes in risk behaviors.
	Center for the Biopsycho-social Study of AIDS/J. Bryan Page	N.A.	N.A.	Title: Education and the Prevention of AIDS in the Haitian Community. Target groups: Anglo, Haitian, Hispanic, and Black communities in Dade County, Florida. Interventions: dissemination of culturally appropriate educational materials.	Will assess current knowledge and behaviors in high- and low-risk neighborhoods as well as assess the relationships between cultural and ecological variables and knowledge and behavior. Will develop culturally appropriate educational materials based on this and modify existing materials.
AIDS Prevention for Adolescents in Schools[bg]	HIV Center for Clinical and Behavioral Studies/Anke Ehrhardt Heather Walter	$204,502, FY87	9/87 through 9/92	Title: AIDS Prevention in Schools. Target groups: high school youth from 2 dissimilar New York City populations. A survey will be done to assess target groups' current AIDS knowledge (i.e., modes of transmission and behaviors to prevent transmission), problem-solving skills regarding prevention, and frequency of high-risk behaviors. A prevention program will be developed and implemented to bridge the knowledge and skills gaps.	The prevention program will be evaluated. Specifics not available.
AIDS Prevention for Adolescent Sex Offenders[bg]	HIV Center for Clinical and Behavioral Studies/Anke Ehrhardt Judith Becker	$22,220, FY87	9/87 through 9/90	Title: AIDS Prevention as Part of Clinical Treatment of Adolescent Sex Offenders. Target group: adolescent sex offenders treated at Psychiatric Institute's Sexual Behavior Clinic. Interventions: 10 sessions which include social skills training, dissemination of general and personal knowledge regarding HIV, social contexts, and integration.	Each subject will be assessed pre- and post-treatment regarding his/her HIV and sexually transmitted disease knowledge.

Table B-1.--AIDS Education Programs Funded by Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) (Continued), May 1988

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
Community Health, Education and Prevention[bg]	HIV Center for Clinical and Behavioral Studies/Anke Ehrhardt Raphael Tavares	$103,877, FY87	9/87 through 9/92	Title: Community Health Education and Prevention. Target groups: communities in Harlem, Upper West Side, and Northern Manhattan. Interventions: build links with community based organizations and existing agencies dealing with AIDS education. Will develop a culturally sensitive educational program.	The prevention programs will be evaluated. Specifics not available.
AIDS Protection for Runaway and Shelter Youths[bg]	HIV Center for Clinical and Behavioral Studies/Anke Ehrhardt Mary Jane Rotheram	$245,694, FY87	9/87 through 9/92	Title: AIDS Prevention Among Youth with High Risk Behaviors. Target groups: male and female adolescents between the 12 and 18 years who seek services at runaway shelters or at agencies serving gay and lesbian youth. Interventions: information dissemination, teaching social skills, and creating supports for health information and healthcare. Purpose: increase general AIDS knowledge (i.e., transmission and risky behaviors) and personal knowledge (i.e., vulnerability and ways to change behavior).	Pre- and post-intervention assessments of attitudes and behaviors will be conducted for two years.
National Institute on Alcohol Abuse and Alcoholism (NIAAA):[h]					
Research on Alcohol-Related Behavior that Increases the Risk of AIDS and/or Research of Prevention Strategies to Reduce that Risk	Not yet determined/ Donald Godwin (NIAAA)	Up to $1 million total	Up to 5 years. Renewable for subsequent periods	This grant seeks to increase research on alcohol-related behaviors that increase the risk of transmitting HIV and on education and prevention strategies to reduce risk. Grant is particularly interested in research targeted to blacks and Hispanics. 3 to 6 awards will be available for the first year of the study and will be made in late FY88 or early FY89.	Will be written into grant proposals.

Table B-1.--AIDS Education Programs Funded by Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) (Continued), May 1988

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
National Institute on Drug Abuse (NIDA) - Division of Clinical Research:					
AIDS Comprehensive Community Outreach Demonstration Projects[1]	Affiliated Systems Corporation/ Irene Easling	$748,280, FY88	10/87 through 10/90	Target groups: IVDUs not in drug abuse treatment programs and their sexual partners. Interventions: information dissemination (prevention information packages) and behavior change interventions. These interventions vary with each Community Outreach Demonstration Project.	An initial interview for demographics, knowledge, and behaviors will be conducted. A 6 month followup interview will assess knowledge change, risk reduction, skills, and social supports. NOVA Research Company is also conducting an assessment of all AIDS outreach demonstration project grants (see below).
	DARCO Drug Services, Inc./Deena Watson	$738,193, FY88	10/87 through 10/90	See description for Affiliated Systems Corporation.	See evaluative component for Affiliated Systems Corporation.
	Department of Human Services (Washington, D.C.)/Larry DeNeal	$1,000,039 FY88	10/87 through 10/90	See description for Affiliated Systems Corporation.	See evaluative component for Affiliated Systems Corporation.
	Harvard Medical School/William McAuliffe	$726,144, FY88	10/87 through 10/90	See description for Affiliated Systems Corporation.	See evaluative component for Affiliated Systems Corporation.
	Narcotic and Drug Research/ Samuel Friedman	$894,964, FY88	10/87 through 10/90	See description for Affiliated Systems Corporation.	See evaluative component for Affiliated Systems Corporation.
	New Jersey State Department of Health (Newark and Jersey City)/Robert Baxter	$2,047,129 FY88	10/87 through 10/90	See description for Affiliated Systems Corporation.	See evaluative component for Affiliated Systems Corporation.
	Philadelphia Health Management Corp/Lynne Kotranski	$739,746, FY88	10/87 through 10/90	See description for Affiliated Systems Corporation.	See evaluative component for Affiliated Systems Corporation.
	San Francisco Department of Health/Harvey Feldman	$998,716, FY88	10/87 through 10/90	See description for Affiliated Systems Corporation.	See evaluative component for Affiliated Systems Corporation.

Table B-1.--AIDS Education Programs Funded by Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) (Continued), May 1988

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
	University of Illinois/Wayne Wiebel and Edward Seney	$1,035,623 FY88	10/87 through 10/90	See description for Affiliated Systems Corporation.	See evaluative component for Affiliated Systems Corporation.
	University of Miami/Clyde McCoy	$1,159,065 FY88	10/87 through 10/90	See description for Affiliated Systems Corporation.	See evaluative component for Affiliated Systems Corporation.
AIDS Targeted Outreach Demonstration Contracts[1]	California School of Professional Psychology/ Josette Mondanaro	$1,007,384 FY88	10/87 through 10/90	Title: Outreach to Sexual Partners and Prostitutes. Target groups: IVDUs not in treatment, their sexual partners, and prostitutes in Boston, Los Angeles, and Phoenix. Interventions: information dissemination (prevention information packages) and behavior change interventions.	An initial interview for demographics, knowledge, and behaviors will be conducted. A 6-month followup interview will assess knowledge change, risk reduction, skills, and social supports. NOVA Research Company is also conducting an assessment of all AIDS outreach demonstration project grants (see below).
	Abt Associates/ Theodore Hammet	About $1 million for FY88	FY88 through FY90	See description under California School of Professional Psychology.	See evaluative component under California School of Professional Psychology.
	Birch and Davis Associates, Inc./Willie Davis	$1,031,988 FY88	10/87 through 10/90	Title: Increasing Capability of Methadone Maintenance Programs. Target groups: IVDUs not in treatment. Interventions: information dissemination (prevention information packages) and behavior change interventions.	See evaluative component for California School of Professional Psychology.
	HTI/J. Valley Rachel	About $1 million for FY88	FY88 through FY90	See description under Birch and Davis Associates, Inc.	See evaluative component under California School of Professional Psychology.
	Marathon House, Inc./Roy Ross	$604,987, FY88	10/87 through 10/90	Title: Outreach to Therapeutic Community Contacts and Clients. Target groups: IVDUs not in treatment. Interventions: information dissemination (prevention information packages) and behavior change interventions.	See evaluative component for California School of Professional Psychology.

Table B 1.--AIDS Education Programs Funded by Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) (Continued), May 1988

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
	Personalized Nursing Corporation, P.C./Marcia Anderson	$812,077, FY88	10/87 through 10/90	Title: Outreach to Emergency Rooms and Detoxification Units. Target groups: IVDUs not in treatment, their sexual partners, and prostitutes. Interventions: information dissemination (prevention information packages) and behavior change interventions.	See evaluative component for California School of Professional Psychology.
	University of Illinois, Chicago/Wayne Wiebel	$972,840, FY88	10/87 through 10/90	Title: Indigenous Leader Outreach. Target group: IVDUs not in treatment and their sexual partners in El Paso, Denver, and Baltimore. Intervention: use outreach workers to influence social networks of IVDUs and their sexual partners.	See evaluative component for California School of Professional Psychology.
	KOBA Associates/ Ken South	About $1 million for FY88	FY88 through FY90	See description under University of Illinois, Chicago.	See evaluative component under California School of Professional Psychology.
National Data Coordination and Evaluation Contract[1]	NOVA Research Company/Paul Young	$653,621, FY88	10/87 through 10/90	Providing the overall national data coordination, evaluation, and assessment of the AIDS Comprehensive Community Outreach Demonstration Grants and AIDS Targeted Outreach Demonstration Contracts.	Perform national assessment of all AIDS outreach demonstration research project grants funded under NIDA. The assessment will provide a trend analysis of behaviors in each city as well as changes in risk behaviors impacted by the intervention on subsamples of subjects 6 months after the initial interview.
Natural History Studies[1]	Baylor College of Medicine/ Howard Kaplan	$329,512, FY88	10/87 through 10/90	Title: Behavioral Correlates of HTLV-III and Immune Deficiency. Target groups: 6,000 students tested in junior high school and as young adults. Interventions: HIV antibody testing.	An ongoing longitudinal study is being conducted. Will look at responses to knowledge of the HIV test results as well as the expectation of taking the test.
	Columbia University/Ann Brunswick	$206,066, FY88	10/87 through 10/92	Title: Multidimensional Study of AIDS Risk in a Black Community. Target group: representative cross section of black Americans from a northern, urban, inner city community. Interventions: personal interviews and home medical screening exams.	Will assess AIDS knowledge and behaviors as well as attitudes.
	Johns Hopkins University/ George Bigelow	$179,957, FY88	10/87 through 10/91	Title: Serological Status and Needle-sharing in Drug Abusers. Target group: IVDUs. Interventions: HIV antibody testing for both a methadone treatment cohort and an untreated cohort.	Parallel-groups randomized trial to observe whether IVDUs attend an AIDS risk-reduction education program and whether risk behaviors decrease after education. Will follow for 2 years to assess changes in seropositivity, health status, and risk behaviors.

Table B-1.--AIDS Education Programs Funded by Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) (Continued), May 1988

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
	Johns Hopkins University/B. Frank Polk	$187,265, FY88	10/87 through 10/89	Title: Epidemiology of LAV Infection Among Imprisoned Drug Users. Target group: 5,000 incoming inmates to the Maryland State Prison System. This project will assess the importance of risk factors for inmates at entry into the prison so that educational interventions can be refined.	At time of entry, inmates will be interviewed. A seroprevalence survey will be conducted during a 12-month period, followed by case-control studies of variables predictive of HIV positivity.
	Johns Hopkins University/B. Frank Polk	$717,466, FY88	10/87 through 10/92	Title: Natural History of HTLV-III Infection Among Drug Users. Target groups: former/current IVDUs in Greater Baltimore area. The purpose of this study is to gain information leading to effective intervention and prevention for IVDUs.	Baseline data will be collected regarding drug use, medical, and demographic characteristics. Subjects will be followed at 6-month intervals for up to 3 1/2 years.
	Montefiore Medical Center/Gerald Friedland	$412,423, FY88	10/87 through 10/92	Title: Natural History of HTLV-III and Immune Deficiency. Target groups: seropositive and seronegative IVDUs enrolled in the Montefiore Drug Abuse Treatment Program (methadone maintenance for opiate addiction). Interventions: HIV antibody testing with educational interventions to determine if antibody status affects risk reduction.	Subjects will be screened for HIV at 6-month intervals in this longitudinal study. Interviews and complete physicals are given. Educational interventions will be evaluated to determine effect upon risk-reduction.
	Narcotic and Drug Research, Inc./Don Des Jarlais	$76,321, FY88	10/87 through 10/89	Title: Risk Factors for AIDS Among Intravenous Drug Users. Target group: IVDUs. Interventions: dissemination of general knowledge of AIDS, antibody testing with counseling.	An analysis of drug injection and heterosexual activity is being conducted. Will examine behavior change among IVDUs.
	New York University Medical Center/Michael Marmor	$125,103, FY88	9/30/86 through 9/30/87	Title: Transmission of HTLV-III among Prostitutes. Target groups: female prostitutes and heterosexually active males and females. Interventions: epidemiologic questionnaires and donation of blood samples for testing.	Subjects will be matched and periodic analyses of seropositivity will be conducted. Risks for contracting HIV will be analyzed for both males and females.
	New York University Medical Center/Mindell Seidlin	$126,837, FY88	10/87 through 10/92	Title: Heterosexual Transmission of HIV to Partners of IVDUs. Target groups: non-IVDUs' steady heterosexual partners of patients in the Bellevue Hospital Methadone Maintenance Treatment Program and hospitalized IVDUs with AIDS. This study will include looking at the determinants of seroconversion in heterosexual partners (e.g., condom usage, frequency and type of sexual contact).	Subjects will be interviewed and examined for HIV.

Table B-1.--AIDS Education Programs Funded by Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) (Continued), May 1988

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
	Scientific Analysis Corp./Daniel Waldorf	$192,423, FY88	10/87 through 10/89	Title: Gay Prostitution, IV Drug Use and AIDS. Target group: male homosexual prostitutes in San Francisco. Study will gather information on patterns of IVDUs, sexual practices, and sexual contacts with women and bisexuals. Also, data will be gathered about the extent to which information and awareness about AIDS have led to changes in IV drug use and risky sexual practices. This will help in developing educational interventions.	Will evaluate the relationships between IV drug use and unsafe sexual practices and test results.
	University of California/ Merle Sande	$276,405, FY88	10/87 through 10/89	Title: HTLV-III Infection in San Francisco IV Drug Users. Target group: heterosexual IVDUs in San Francisco. Interventions: test/interview for HIV seroprevalence, assess risk-reduction interventions, and current behavioral risk factors.	A cohort of seropositive IVDUs will be matched with seronegative controls and followed at 6-8 month intervals.
	University of Maryland/David Nurco	$242,019, FY88	10/87 through 10/92	Title: Narcotic Addiction, AIDS and Intervention. Target group: 270 narcotic addicts. Interventions: clinically guided self-help approach, standard clinic treatment, standard clinic treatment with structured lecture series focusing on AIDS topics. HIV antibody testing will be done.	Blood samples will be drawn every 3 months from all clients who previously tested negative. Will examine the attitudes and behaviors of a randomly selected group.
	University of Miami/Dale Chitwood	$189,607, FY88	10/87 through 10/90	Title: The Epidemiology of HTLV-III in Intravenous Drug Users. Target group: IVDUs in treatment. Intervention: HIV antibody testing. Purpose: establish profile of IVDU in treatment and assess impact that being screened has upon subsequent risk behaviors.	Phase 1--test and interview IVDUs about risk factors. Data will be analyzed to get profile of high-risk IVDUs. Phase 2--seronegative subjects will be tested every 6 months for a period of up to 3 years. Phase 3--seropositives from phase 2 will enter case control study to identify risk factors. Phase 4--followup of those seropositive and seropositive at baseline to determine if finding out seropositivity during treatment helps change risky behavior after treatment.
	Veterans Administration Hospital (Hines, IL)/Walter Dorus	$173,309, FY88	10/87 through 10/92	Title: Consequences of HTLV-III Infection for IV Drug Abusers. Target group: 550 male IVDUs and their sexual partners. Interventions: HIV antibody testing to determine if knowledge of results affects drug use (e.g., frequency of drug use, sharing needles) and sexual behavior (e.g., number of sexual partners and precautions).	Subjects will fill out a questionnaire and will be tested for HIV at 3 month intervals for 3 years. Patients are split into seropositive, seronegative, and control groups.

Table B-1.--AIDS Education Programs Funded by Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) (Continued), May 1988

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
	Yale University/ Herbert Kleber	$68,104, FY88	10/87 through 10/89	Title: Drug Users and HTLV-III: Clinical Course and Control of Spread. Target group: IVDUs in treatment in New Haven. Interventions: HIV antibody testing, interviewing, and methadone maintenance.	A longitudinal study is evaluating the effectiveness of methadone maintenance in preventing the spread of HIV. Four groups (seropositive IVDUs in New Haven, IVDUs not in drug treatment, IVDUs in a methadone maintenance program, and a control group) will be be compared over 2 to 6 years.
	Youth Projects, Inc./John Watters	$204,300, FY88	10/87 through 10/90	Title: Seroprevalence and Sequelae Among IV Users in Two Cities (San Francisco and New York City). Target groups: IVDUs from treatment programs and out-of-treatment. Interventions: HIV antibody testing.	Will examine knowledge of risk factors, participation in risky behaviors, and seroprevalence.
Pediatric Natural History Studies[1]	University of Maryland/ Johnson	$94,535, FY88	10/87 through 10/92	Title: AIDS Risk in Pregnant IV Drug Users and Their Children. Target groups: IVDUs and their children. Interventions: HIV antibody testing and counseling. One purpose is to assess the impact of HIV infection and childbirth upon drug use behavior.	Subjects will be tested for HIV antibody. Followup will be conducted to compare drug use before and after identification of HIV positivity or childbirth. Infants will be screened at delivery and followed.
Prevention-Intervention Studies[1]	Cleveland State University/ Stephens	$215,739, FY88	10/87 through 10/89	Title: An AIDS Prevention Program for IV Drug Users. Target group: IVDUs. Interventions: compare 1 session and 3 session educational programs to prevent needle-sharing and sexual behavior.	2 groups pre- and post-intervention design will be used to assess AIDS related knowledge and behaviors. Followup data will be collected 6 months after the intervention.
	Johns Hopkins University/ Mandell	$103,000, FY88	10/87 through 10/89	Title: Prevention of HIV Infection in IV Drug Users. Target group: IVDUs. Interventions: prospective random assignment comparative trial of structural counseling and a public health intervention (pamphlet).	Will assess intentions to use sterile equipment, HIV seroconversion rates, and self-reported behaviors.
	Narcotic and Drug Research/ Wexler	$269,845, FY88	10/87 through 10/90	Title: AIDS Risk Reduction Among IVDUs on Parole. Target group: parolees. Interventions: randomized to HIV antibody testing and prevention training program or to no intervention.	Will evaluate 1 year after prison discharge for AIDS knowledge and changes in drug and sexual behavior

Table B-1.--AIDS Education Programs Funded by Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) (Continued), May 1988

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
	New York State Office of Alcohol and Substance Abuse Services/ Lipton	$218,995, FY88	10/87 through 10/91	Title: Multi-assessment Experiment Involving Methadone. Target group: IVDUs in methadone programs. Interventions: AIDS education, HIV antibody testing, contigency contracting, and peer support groups.	Two methadone programs will provide the interventions, and a third will serve as a control. Assessments of changes in knowledge, attitudes, and high risk behaviors will be made at base time and post-intervention.
	Spectrum House, Inc./Lewis	$295,229, FY88	10/87 through 10/90	Title: AIDS Risk Reduction Interventions for IV Drug Abusers. Target group: IVDUs admitted to a residential detoxification program. Interventions: IVDUs are randomly assigned to 1 of 3 intervention groups: AIDS educational program during detoxification process, AIDS educational program after detoxification process, or educational program to teach skill and self-efficacy building and risk-reduction behaviors.	Assessments of knowledge and risk-reduction will be made during intervention and at 2 and 4 months after discharge.
	University of California, San Francisco/ Broadhead	$115,879, FY88	4/88 through 4/89	Title: Community Outreach to Combat the Spread of AIDS. Target groups: IVDUs and their sexual partners. Interventions: will identify essential and effective components of providing risk reduction interventions to drug users not in treatment programs.	This is an ethnographic study to examine the experience of using indigenous outreach workers as part of AIDS prevention interventions.
	University of California, San Francisco/ Marin	$220,297, FY88	10/87 through 10/89	Title: Preventing AIDS in Latino Community and IV Drug Users' Families. Target group: families of Hispanic IVDUs. Interventions: subjects will be randomly assigned to group educational approaches or to control conditions.	Pre- and post-intervention assessments will be made on beliefs and intentions regarding AIDS prevention.
	University of California, San Francisco/ Sorenson	$193,009, FY88	10/87 through 10/89	Title: AIDS Prevention in Drug Abusers: Psychoeducational Approach. Target group: IV opiate users. Interventions: compare 10-hour training program to a program of written materials.	Will analyze attitudes toward risk, behavior change, substance abuse status, and immune status of experimental and comparison groups. In addition, a process evaluation of the progress will be made.
	University of Washington, Seattle/Calsyn	$147,212, FY88	10/87 through 10/90	Title: AIDS Prevention in IV Drug Users. Target group: IVDUs. Interventions: educational package informing IVDUs about high-risk drug abuse and sexual practices, and HIV antibody testing with the educational package.	Pre- and post-intervention measures will made for an experimental and a delayed treatment control group. Measures include knowledge, attitudes, and reduction of high risk behaviors.
	Youth Environment Study/Feldman	$162,148, FY88	10/87 through 10/90	Title: Methods to Stop the Spread of AIDS Among IV Drug Users. Target group: IVDUs in 2 areas of San Francisco. Interventions: AIDS education and community health outreach program, information dissemination about needle-sharing practices.	Evaluation will consist of 3 parts: an ethnographic study of areas conducted prior to the intervention, interviews with IVDUs from communities after introduction of the intervention and 1 year later.

Table B-1.--AIDS Education Programs Funded by Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) (Continued), May 1988

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
	Youth Environment Study/Feldman	$162,148, FY88	10/87 through 10/90	Title: Methods to Stop the Spread of AIDS Among IV Drug Users. Target group: IVDUs in 2 areas of San Francisco. Interventions: AIDS education and community health outreach program, information dissemination about needle-sharing practices.	Evaluation will consist of 3 parts: an ethnographic study of areas conducted prior to the intervention, interviews with IVDUs from communities after introduction of the intervention and 1 year later.

N.A. = Not Available
IVDUs = intravenous drug users

[a] Table includes only those program components targeted to the general population, homosexual/bisexual men, IVDUs, sexually transmitted disease clinic attendees, and school-age youth.
[b] Stover, E., Deputy Director, Division of Basic Sciences, National Institute of Mental Health, Alcohol, Drug Abuse, and Mental Health Administration, Public Health Service, U.S. Department of Health and Human Services, Rockville, MD, personal communication, April 18, 1988.
[c] Curvy, M., Program Specialist, Division of Basic Sciences, National Institute of Mental Health, Alcohol, Drug Abuse, and Mental Health Administration, Public Health Service, U.S. Department of Health and Human Services, Rockville, MD, personal communication, May 19, 1988.
[d] Kemp, V., Budget Analyst, National Institute of Mental Health, Alcohol, Drug Abuse, and Mental Health Administration, Public Health Service, U.S. Department of Health and Human Services, Rockville, MD, personal communication, May 19, 1988.
[e] Roos, L., Administrative Coordinator, Center for AIDS Prevention Studies, University of California, San Francisco, CA, personal communication, May 19, 1988.
[f] Moore, O., Administrative Analyst, Center for AIDS Prevention Studies, University of California, San Francisco, CA, personal communication, May 19, 1988.
[g] Ehrhardt, A., Director, HIV Center for Clinical and Behavioral Studies, New York, NY, personal communication, May 6, 1988.
[h] AIDS Record, "Federal Research Funding Opportunities," AIDS Record 2(8/9). 20, April 8, 1988.
[i] Ansel, Z., Research Anthropologist, Clinical Medicine Branch, National Institute on Drug Abuse, Alcohol, Drug Abuse, and Mental Health Administration, Public Health Service, U.S. Department of Health and Human Services, Rockville, MD, personal communication, April 12, 1988, and May 16, 1988.
[j] Weissman, G., Public Health Service Analyst, National Institute on Drug Abuse, Alcohol, Drug Abuse, and Mental Health Administration, Public Health Service, U.S. Department of Health and Human Services, Rockville, MD, personal communication, May 19, 1988.

SOURCE: Office of Technology Assessment, 1988.

Table B-2.--AIDS Education Programs Funded by the Centers for Disease Control (CDC), May 1988[a]

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
Center for Health Promotion and Education:					
Cooperative Agreement - National Programs for School Health Education to Prevent the Spread of AIDS (SHEPSA)[b]	American Alliance for Health, Physical Education, Recreation, and Dance/Becky Smith	$96,973, FY87	9/28/87 through 9/28/88 Renewable on annual basis.	N.A.	N.A.
	American Association of School Administrators/Effie Jones	$103,711, FY87	9/28/87 through 9/28/88 Renewable on annual basis.	Target group: school superintendents (indirectly students). Interventions: workshops providing facts and statistics about AIDS and strategies for implementing an effective comprehensive AIDS education program, articles, and press releases.	Will collect, summarize, and analyze 5 exemplary AIDS programs and 25 local school district policies.
	American College Health Association/ Richard Keeling	$92,919, FY87	9/28/87 through 9/28/88 Renewable on annual basis.	Target groups: college staff and students (one staff member and student from each participating school). Interventions: regional AIDS education workshops by host colleges with "train-the-trainer" format. Sessions include AIDS education issues and small group meetings on campus AIDS prevention strategies. Training manual will be developed after the workshop for use on college campuses.	Will evaluate and revise workshop format and continue to help workshop participants in providing AIDS education to college students.
	American School Health Association/ Dana Davis	$93,155, FY87	9/28/87 through 9/28/88 Renewable on annual basis.	Target groups: school-based professionals, students, and parents. Interventions: training programs and workshops to disseminate accurate and effective AIDS information. Also, disseminate a fact sheet on AIDS and educational resources and a manual entitled "School Based AIDS Education: A Multidisciplinary Approach to Prevention."	Will implement and analyze needs assessment questionnaire of school-based professionals. Workshop will be tested and evaluated so that the manual as well as the workshop can be disseminated.
	Center for Population Options/Debra Haffner	$99,888, FY87	9/28/87 through 9/28/88 Renewable on annual basis.	N.A.	N.A.

Table B-2.- AIDS Education Programs Funded by the Centers for Disease Control (CDC), May 1988 (Continued)

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
	Council of Chief State School Officers/ Cynthia Brown	$302,000, FY87	9/28/87 through 9/28/88 Renewable on annual basis.	Target group: 37 State education agencies (indirectly students). Intervention: 3 2-day regional conferences which include a general session, a question and answer session, and 4 interactive workshops.	Will conduct a survey to determine the status of AIDS education in the States (i.e., State policies, content of curricula). Will assess State plans implemented after the conference to determine needed technical assistance.
	ETR Associates/ Sandra Orwitz Ludlow	$134,268, FY87	9/28/87 through 9/28/88 Renewable on annual basis.	N.A.	N.A.
	National Association of State Boards of Education/ Patricia Mitchell, Katherine Fraser	$154,277, FY87	9/28/87 through 9/28/88 Renewable on annual basis.	Target groups: State policymakers and agencies, school staff, parents, and community. Interventions: Will develop model policies and assist States in implementing effective policies to increase the number of schools providing AIDS education, to increase the number of youth receiving AIDS education and to increase the quality of that education.	Information collected about successful and unsuccessful state policies and educational programs will be developed into guidelines, Policymaker's Guide to Effective AIDS Education which is available to any requesting State.
	National Coalition of Advocates for Students/Devon Davidson	$100,000, FY87	9/28/87 through 9/28/88 Renewable on annual basis.	Target groups: schools and CBOs serving migrant, immigrant, and black rural teenagers. Interventions: information dissemination of an English/Spanish brochure from ETR Associates to CBOs and clinics in Florida and Texas; superintendents of targeted communities given sample education materials; newsletter mailed to over 400 child advocacy groups. Future intervention plans: disseminate videos in Spanish and Haitian Creole, audiotapes in Creole for use on Haitian radio stations, begin "training for trainers" program.	Nothing noted.
	National Coalition of Hispanic Health and Human Services Organizations/ Ivette Torres	$117,784, FY87	9/28/87 through 9/28/88 Renewable on annual basis.	Target group: agencies serving out-of-school Hispanic youth between 12 and 17 years. Interventions: provide agencies with models, materials, and curricula; conduct inventory of Hispanic youth serving agencies in Chicago, El Paso, Los Angeles, New York, and San Juan; disseminate information to Hispanic elected officials; distribute articles in Spanish and English to print media, hold a training workshop and a forum.	Assess agencies' capabilities and interest in providing education. Material will be critiqued by a committee for appropriateness and evaluation against culture specific criteria.

Table B 2.--AIDS Education Programs Funded by the Centers for Disease Control (CDC), May 1988 (Continued)

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
	National Network of Runaway and Youth Services, Inc./Renee Woodworth	$100,000, FY87	9/28/87 through 9/28/88 Renewable on annual basis.	Target groups: youth serving agencies, youth that go to centers or receive outreach services. Future target groups include foster parents, people in detention centers and in group homes. Interventions: disseminate 6 program modules; connect youth with families, medical and education services; group/one-on-one counseling; street outreach; hotlines; printed handouts; training for adults to help youth. Future interventions include disseminating materials to a broader service delivery area.	Conduct a survey to determine the current level of AIDS programs and gather successful AIDS education plans. Review program modules.
	National Organization of Black County Officials/ Webster Guillory	$100,000, FY87	9/28/87 through 9/28/88 Renewable on annual basis.	Target groups: black and minority youth aged 12 to 21 living in urban and rural communities. Interventions: National AIDS Task Force and National AIDS/ARC Liaison Team formed; disseminate AIDS education brochures, articles, newsletters.	Complete evaluation of needs assessment. Specifics not available.
	National PTA/Denise Carter	$103,711, FY87	9/28/87 through 9/28/88 Renewable on annual basis.	Target groups. parents, PTAs at State, district, council, and local levels (indirectly students). Interventions: parent education meetings on AIDS and school health programs, intensify AIDS education activities in 5 States, awards and certificate of recognition programs, disseminate guidebooks and How to Talk to Your Teens and Children About AIDS.	Nothing noted.
	National Rural and Small Schools Consortium/ Doris Helge	$104,400, FY87	9/28/87 through 9/28/88 Renewable on annual basis.	N.A.	N.A.
	National School Boards Association/ Dale Gaddy	$98,925, FY87	9/28/87 through 9/28/88 Renewable on annual basis.	Target groups: local school board members, State school boards, teachers, parents, school health professionals (indirectly students). Interventions: training and programs addressing educational issues, national clearinghouse for local school boards, disseminate handbook (i.e., how to involve parents, guidelines for evaluating and selecting AIDS educational materials).	Baseline information is being collected on the number and nature of recent education meetings and the extent to which AIDS education is being provided by local school districts to students. Training program will be modified based on evaluation.

Table B-2.--AIDS Education Programs Funded by the Centers for Disease Control (CDC), May 1988 (Continued)

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
State Programs for School Health Education to Prevent the Spread of AIDS (SHEPSA)[b]	15 State Education Agencies (SEAs)/varies with agency	$4.6 million for both SEAs and LEAs.	9/28/87 through 9/28/88 Renewable on annual basis.	Target groups include youth (in and out of school, in juvenile detention centers, drug rehabilitation facilities, in all grade levels). Delinquent and minority youth are also targeted. Interventions include dissemination of age appropriate educational materials (English/Spanish), print and visual materials for mass media distribution, videos, a speakers' bureau, a clearinghouse, establishing groups outside of the classroom for discussion, and the establishment of peer theater groups for information dissemination. Most SEAs are incorporating AIDS education into a comprehensive health education program.	Most SEAs are collecting baseline information on the number and nature of educational programs being provided by school districts to students. Pre- and post-test measures will determine the level of AIDS-related knowledge, attitudes, and behavioral intent among the target groups. Questionnaires, surveys, and interviews will be used. One State school system will compare schools participating in AIDS education to nonparticipating schools to determine the need for AIDS education. Some schools will serve as a control group. Most SEAs will evaluate the materials being disseminated for age-appropriateness.
Local Programs for School Health Education to Prevent the Spread of AIDS (SHEPSA)[b]	12 Local Education Agencies (LEAs)/varies with agency	$4.6 million for both SEAs and LEAs.	9/28/87 through 9/28/88 Renewable on annual basis.	Target groups include youth (in and out of school/college, all grade levels, minorities). Interventions include dissemination of AIDS awareness and prevention materials (English/Spanish), informational packets, speakers' bureau, education training sessions.	Most LEAs will evaluate the age-appropriateness of the educational materials. Will assess whether or not AIDS education programs have been incorporated with school health education. Questionnaires and surveys will be used. Most will use pre- and post-test measures of knowledge, attitudes, behavioral intentions, and behaviors. One LEA will analyze information about knowledge and behaviors of a representative sample of 500 out-of-school youth. All LEAs will provide reports to CDC.
Training/ Demonstration Programs for School Health Education to Prevent the Spread of AIDS[b]	Michigan Department of Education/ Wanda Jubb	$250,000, FY87	9/28/87 through 9/28/88 Renewable on annual basis.	Target group: representatives of local and State education agencies. Training/demonstration sessions will provide model criteria and guidelines for effective education, keeping students with AIDS in schools, working with the media, training in the selection and approval of AIDS educational materials. Information on the integration of AIDS education within a more comprehensive school health program as well as on methods to monitor the level of students' AIDS knowledge will be provided. Sessions held in 12/87, 3/88, 5/88, and 9/88.	Participants will fill out preassessment instrument. A second instrument will be filled out after the session. The session will be reformatted. Each participating member will fill out anticipated goals and will complete a another instrument 2 months after the session.

Table B-2.--AIDS Education Programs Funded by the Centers for Disease Control (CDC), May 1988 (Continued)

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
	New York State Education Department/ Arlene Sheffield	$240,000, FY87	9/28/87 through 9/28/88 Renewable on annual basis.	Target group: members of State educational agencies. The Training/Demonstration Project will include 4 AIDS Education Planning and Programming Conferences to address AIDS concerns within the schools. Each participant will receive 32 hours of training over 4 days.	Evaluation instruments will be administered to conference participants before and after the training program and given to an evaluator for analysis. The training will be reformatted in subsequent sessions. A 6-month followup questionnaire will be filled out to determine members level of action.
	San Francisco Unified School District/Joan Haskin	$239,113, FY87	9/28/87 through 9/28/88 Renewable on annual basis.	Target groups: representatives from public health agencies, community agencies, and schools, all who provide education to youth (in or out of school). Interventions: 3-day AIDS outreach and education workshops, dissemination of informational packages, focus group meetings. Purpose: to determine effective strategies for prevention programs.	Pre- and post-test measures will be used to assess the current levels of knowledge and skills and problem areas. Followup surveys will be used. The evaluation is useful for determining which schools and community agencies are providing AIDS education.
Integration of Information on AIDS, Smokeless Tobacco, and Suicide into Growing Healthy and Teenage Health Teaching Models[b]	Educational Development Center, Inc./N.A.	N.A.	9/28/87 through GET THIS	Will integrate AIDS information into comprehensive school health curricula, Growing Healthy and Teenage Health Teaching Models.	N.A.
Guidelines for Effective School Health Education To Prevent the Spread of AIDS[c]	CDC/Jack Jones, Lloyd Kolbe	N.A.	Printed in MMWR on 1/29/88	Guidelines that provide information about AIDS for educators and other personnel who must implement AIDS education for youth to prevent the transmission of HIV.	The extent to which school programs follow the guidelines.

Table B-2.--AIDS Education Programs Funded by the Centers for Disease Control (CDC), May 1988 (Continued)

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
Center for Prevention Services:					
AIDS Community Demonstration Projects[d]	Dallas County Health Department/ Charles Haley	$382,430, FY88	9/29/85 through 9/28/89	Target groups: minorities, homosexual/bisexual men, adolescents, prostitutes, IVDUs in treatment, and the general Dallas community. Interventions: partner notification, media educational campaign, educational materials (English and Spanish), a speakers' bureau, school AIDS health education program, HIV antibody screening, and street education.	A longitudinal cohort study of gay men has begun. Surveys will be conducted before and after the interventions for homosexual/bisexual men, minorities, IVDUs, and heterosexuals with multiple sex partners. Teachers' knowledge of AIDS will be evaluated. Condom sales may also be monitored.
	Denver City and County Health Department/ David Cohn	$603,381, FY88	9/29/85 through 9/28/89	Target groups: homosexual/bisexual men. Next fiscal year, IVDUs in methadone treatment will be targeted. Interventions: information about AIDS provided through mass media, HIV testing and counseling (includes instruction on proper use of condoms and negotiating safer sex), and behavioral studies to monitor HIV spread.	Longitudinal study of changes in knowledge, attitudes, beliefs, self-reported sexual behavior and seroprevalence among a cohort of 380 men.
	New York State Health Department/ Carolyn Beeker	$727,739, FY88	9/29/85 through 9/28/89	Cities included in this grant: New York City and Albany. Target groups: homosexual/bisexual men in a "closeted" community. Narcotics and Drug Research, a subcontractor, targets IVDUs not in treatment. Interventions: homosexual/bisexual men--mass media, HIV testing and counseling, instructions on condom use; IVDUs--antibody testing and counseling, information dissemination for IVDUs and sexual partners at an STD clinic. Impact on drug use, sexual behavior, and marital relations will be evaluated.	A cohort of 450 homosexual/bisexual men are being followed to assess changes in seroprevalence due to the interventions.
	Seattle-King County Health Department/ Robert Wood	$874,667, FY88	9/29/85 through 9/28/89	Target groups: gay men, street youths, IVDUs, and others at risk. Interventions: 1) a mass media educational campaign called "Please Be Safe," 2) outreach for youth, 3) relapse prevention to maintain changed behavior (including sexual) among alcoholics and drug users, 4) counseling and/or HIV testing in the AIDS Assessment Clinic.	A cohort of approximately 800 men are being followed to monitor changes in knowledge, attitudes, beliefs, and self-reported sexual behaviors. There is also a pre- and post-test evaluation component of the AIDS school curriculum intervention.

Table B-2.--AIDS Education Programs Funded by the Centers for Disease Control (CDC), May 1988 (Continued)

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
	Chicago Department of Health/Lonnie Edwards	$734,977, FY88	9/29/86 through 9/28/90	Target groups: prostitutes, IVDUs, street youth, homosexual adolescents, and homosexual/bisexual black and Hispanic populations. Interventions: information dissemination. Prostitutes are contacted in jails, courts, and on street corners; IVDUs where they buy and use drugs; and youth in shelters.	Changes in knowledge, beliefs, attitudes, and self-reported high-risk sexual behavior will be monitored in cohorts. A representative telephone survey will be conducted to assess prevalent sexual behavior.
	Long Beach Department of Public Health/Nancy Corby	$676,983, FY88	9/29/86 through 9/28/89	Target groups: homosexual/bisexual men, IVDUs, minorities, prostitutes. Interventions: Subcontracting agencies/universities will develop and implement AIDS educational approaches (computer based, print and electronic media) for university students, PSAs for prostitutes and IVDUs, mass media messages to minorities, recreational and social activities for gays as an alternative to bars and bathhouses, and HIV antibody testing for all to assess impact on sexual and health-related behavior.	A cohort of gay men will be followed to measure changes in knowledge, attitudes, beliefs, and self-reported sexual behaviors. Risk-taking and avoidance behavior will be monitored.
Data Management and Analysis Contract for AIDS Community Demonstration Projects[e]	Professional Management Associates, Inc. (PMA)/Kevin O'Reilly (CDC)	$423,000, FY88	9/1/88 through 8/31/89	(1) Provide data processing and statistical analysis; (2) conduct univariate, bivariate, and multivariate analysis of the data; and (3) transfer data from each site and correct errors.	PMA will submit quarterly narrative reports and ongoing evaluation. Will develop questionnaire data from each site and provide meaningful interpretations of the data.
AIDS Education for Public Officials[f]	United States Conference of Mayors (USCM)/Matthew Murguia	$566,130, FY87	5/1/84 through 5/31/88	USCM subcontracted to CBOs. CBO target groups include blacks, Hispanics, American Indians, adults, teens, women, homosexuals, IVDUs, prison inmates, prostitutes, STD clients. Interventions include "safer sex parties," condom distribution, media campaigns, PSAs, brochures, seminars, billboards, posters, t-shirts, counseling, information telephone line, education workshops, and focus groups.	CBOs will conduct some sort of evaluation. Typically, this involves pre- and post-test surveys. Also, CBOs may monitor the number of items distributed as a result of the intervention.
Innovative Projects for Risk Reduction[g]	Narcotic & Drug Research, Inc./Don Des Jarlais	$311,322 total	6/1/86 through 5/31/88 Extended to 11/88.	Target group: potential IVDUs. Intervention: Information about prevention and treatment of drug abuse is disseminated to small groups. Role modeling is used to empower individuals to resist trying drugs.	Evaluation of intervention will be completed in 1988. Specifics not available.

Table B-2.--AIDS Education Programs Funded by the Centers for Disease Control (CDC), May 1988 (Continued)

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
	Gay Men's Health Crisis, Inc./Joanne Mantel	$680,279 total	5/1/86 through 7/31/88	Target group: homosexual/bisexual men. Interventions: 1st year--studied effectiveness of 3 educational strategies for risk-reduction, 2nd year--developed a single core intervention strategy based on the results of the 1st year strategies. The effectiveness of a single session videotape intervention in a community setting (i.e., homosexual bars, bathhouses, and adult theaters) is being assessed.	Evaluations of the core intervention strategy, the videotape-based intervention, and interventions for homosexual/bisexual male prisoners and men with chemical dependency disorders are underway.
	Beth Israel Medical Center/Stanley Yancovitz	$375,527 total	9/29/86 through 9/28/88	Target group: IVDUs on a waiting list for treatment. Intervention: AIDS-related information is given in combination with an interim methadone treatment program.	Evaluation has shown that IVDUs on methadone are stabilizing and chemical dependency problems are diminishing. Each client serves as his/her own control.
	Memorial Sloan-Kettering Cancer Center/Susan Tross	$375,100 total	2/15/86 through 2/14/88 Extended to 8/14/88	Target group: 3 groups of homosexual men at various levels of vulnerability to HIV. Interventions: psychological skills training and videotape for risk reduction.	Subjects are involved in a randomized trial to examine the impact of interventions on AIDS risk behavior and subjective stress. Evaluation should be completed in 1988.
	University of Pittsburgh/ Ronald Valdiserri	$258,837 total	2/15/86 through 5/31/88	Target group: homosexual men. The effectiveness of 2 different interventions will be determined--single session education versus single session education with skills and self-efficacy training.	Preliminary results from the evaluation suggest education with skills and self-efficacy training is effective in reducing risk.
	Ohio Department of Health/Bob Campbell	$66,943 total	4/15/86 through 4/30/88 Extended to 10/88.	Target groups: homosexual/bisexual men. Intervention: educational/ promotional campaign to gay/bisexual men in Cleveland, Columbus, and Cincinnati.	Results of evaluation expected in 1988. Specifics not available.
	AIDS Project/Los Angeles/ Charles Lewis	$253,632 total	9/29/86 through 6/30/88	Target group: homosexual/bisexual men. Purpose: to determine the usefulness of telephone interviews to identify men with insufficient AIDS knowledge and who engage in high risk behaviors. The impact of increasing access to information and counseling for high-risk individuals will be assessed.	Results of evaluation expected in 1988. Specifics not available.

Table B-2.--AIDS Education Programs Funded by the Centers for Disease Control (CDC), May 1988 (Continued)

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
AIDS Prevention Projects[gh]	59 States, cities, and territories/ Varies by State, city, and territory	$87 million for 8 months	Project period varies from 1 to 5 years.	Purpose: to maintain and measure behavioral change among members of the general population and specific groups to reduce HIV transmission, and to develop effective, culturally relevant programs to educate the general population especially minorities. Target groups: For FY87--(%'s refer to proportion of AIDS Prevention Projects targeted to certain groups) general population (95%), homosexual/bisexual men (93%), IVDUs (89%), prostitutes (49%), sex partners (70%), HIV infected (84%), school (86%), Blacks (60%), Hispanics (51%). Interventions: FY87 examples--speakers' bureau, hotlines, AIDS school curriculum, partner notification, PSAs, HIV testing and counseling, drug treatment program counseling, dissemination of educational materials (brochures, Surgeon General's Report, posters, videotapes, manuals), educational media campaigns, drama presentations, IVDUs Outreach Program, and others. FY88 activities will include conducting an ongoing surveillance of target groups in order to target prevention activities, public information campaigns, and partner notification (as well as those activities mentioned above).	Programs are evaluated on an individual basis. Periodic assessments of knowledge, attitude, and behavior change will be conducted. CDC is not providing a "systematic, standard protocol" for evaluation. [hi]
Perinatal AIDS Prevention Community Demonstration Projects[gg]	New Jersey/George Halpin	Less than $750,000 for FY88	Began 9/1/87 with 5 months duration. Continu-ation grants available each year for a possible project period of 5 years.	Target group: women at high risk for HIV infection in Jersey City, Newark, and Patterson who are attending medical clinics, planned parenthood clinics, and drug abuse treatment. Interventions: identify women who are not affiliated with the health care system and ascertain their knowledge, attitudes, intentions about HIV infection and pregnancy through surveys, questionnaires, and interviews. From this information, develop effective methods of contraceptive practices. Provide counseling and outreach using street workers.	Will evaluate how well women at risk are identified and whether are not they are using effective contraception. Will determine if women are using more effective contraception after the intervention and determine reasons why HIV + women still want to become pregnant in order to target educational efforts.

Table B-2.--AIDS Education Programs Funded by the Centers for Disease Control (CDC), May 1988 (Continued)

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
	Nassau County, New York/Robert Levin	N.A.	Began 9/1/87 with 5 months duration. Continuation grants available each year for a possible project period of 5 years.	Target group: women at high risk for HIV infection who attend medical clinics, planned parenthood clinics, and drug abuse treatment. Interventions: identify women who are not affiliated with the health care system and ascertain their knowledge, attitudes, intentions about HIV infection and pregnancy through surveys, questionnaires, and interviews. From this information, develop effective methods of contraceptive practices and determine reasons why HIV + women still want to become pregnant in order to target educational efforts.	Will evaluate how well women at risk are identified and whether are not they are using effective contraception. Will determine if women are using more effective contraception after the intervention.
	Houston, Texas/Elaine McFarlain	$226,000 for FY88	9/1/87 through 8/31/88	Target group: women at high risk for HIV infection attending local health departments, STD clinics, family planning clinics, and perinatal clinics. Interventions: identify women who are not affiliated with the health care system and ascertain their knowledge, attitudes, intentions about HIV infection and pregnancy through surveys, questionnaires, and interviews. From this information, develop effective methods of contraceptive practices and determine reasons why HIV + women still want to become pregnant in order to target educational efforts.	Will evaluate how well women at risk are identified and whether are not they are using effective contraception. Will determine if women are using more effective contraception after the intervention.
	Up to six new projects in FY88/Stuart Berman (CDC)	$5 million	3 to 5 years	Applications are due July 15, 1988 for new projects. Will target women at high risk for HIV infection	

Table B 2 -- AIDS Education Programs Funded by the Centers for Disease Control (CDC), May 1988 (Continued)

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
National Information/Education Program					
National AIDS Information/ Education Campaign[jk]	Ogilvy and Mather (O & M) Public Affairs/Laurie Sherman (CDC)	1st year: $4,676,989 2nd year: $2,938,829 Total with additional work $8,051,958 (outstanding change in orders about $1.5 million.)	7/31/87 through 7/30/89	Title: American Responds to AIDS. Target groups: Wave I--general population, Blacks, and Hispanics (August-December 1987); Wave II--general population, women at risk (May/June 1988), Wave III--general population, sexually active adults (July/August 1988); and Wave IV--general population, parents and teens (Fall 1988). Interventions include mass media events (PSA campaign outreach, radio shows, magazines, newspapers, billboards, newsletters, video materials), dissemination of print ads, brochures (e.g., "What You Should Know About AIDS"), posters (every wave except the first), and the national mailing of "Understanding AIDS." Conferences, meetings, and workshops were also held. Special audience programs will be developed for blacks, Hispanics, homosexual/bisexual men, and IVDUs.	The goal of the campaign is to change people's attitudes and shift the environment (i.e., more compassion for AIDS patients), and through these attitude changes affect behavior. Materials are reviewed and tested in focus groups. Results from the August 1987 National Center for Health Statistics (NCHS) "AIDS Knowledge and Attitudes" survey serve as baseline data of the public's knowledge and attitudes. Evaluation is being conducted by analyzing the data from the NCHS survey (conducted monthly August through December 1987 and resuming in April 1988; behavior questions on testing and counseling will be included in June 1988 survey), analyzing the Broadcast Advertiser Report which estimates dollar figures for the number of PSAs aired, and monitoring the number of news articles appearing in papers and journals. Comparison of the number of calls to the hotline for each month during the campaign serves as another indicator. See also Macro Systems contract.

Table B-2.--AIDS Education Programs Funded by the Centers for Disease Control (CDC), May 1988 (Continued)

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
National mailing[jk]	Ogilvy and Mather Public Affairs/Ken Williams (CDC)	Funds included in change of orders under National/ Information Education Campaign.	1/88 through 7/88	Every household and post office box in the United States and all territories and Puerto Rico will receive a copy of the document in May. Puerto Rican residents will get the document in Spanish with a phone number to order an English one. English brochures list a phone number to call to order Spanish brochures and vice versa. Objective: increase knowledge and influence attitudes and beliefs.	Several evaluation measures: (1) Will analyze National Center for Health Statistics (NCHS) "AIDS Knowledge and Attitudes" survey. The May 1988 survey responses serve as baseline data. Questions about the mailout will be contained in the June and July surveys. Private polling agencies are also analyzing the effect. (2) Will assess the impact of the mailout through content and numeric analysis of the media (print, video, television, and radio). The Broadcast Advertiser Report will estimate dollar figures for the number of PSAs aired. (3) Analytical components are contained in the National AIDS Hotline and the National AIDS Information Clearinghouse. AT&T will list the area codes for calls made to the hotline (taped message and operator assisted calls) in order to see where most callers are located. The Clearinghouse will provide written reports on the number of letters requesting the mailer as well as the number mentioning the mailer. Zip codes will be analyzed to determine where most requesters are located. (4) Will monitor the utilization of counseling and testing facilities as well as STD clinics, drug abuse treatment facilities, family planning clinics, and private labs.
National AIDS Information Education Minority Outreach Initiative[l]	National ethnic/ minority organizations	$6 million	1 year budget period	The National Minority Outreach Initiative will make awards to a maximum of 30 national ethnic minority organizations in July 1988. The awards will vary between $100,000 to $300,000 for a 1 year budget period.	Will be written in grant proposals.

Table B-2.--AIDS Education Programs Funded by the Centers for Disease Control (CDC), May 1988 (Continued)

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
National AIDS Hotline[m]	American Social Health Association/ Sandy Pinto	Originally funded for $1.5 million and expanded to $10.1 million for optional years and expansion	Funded from 9/86 through 9/90.	1-800-342-AIDS. The hotline provides information and referral services 24 hours a day/7 days a week to people in all States, D.C., Puerto Rico, and the Virgin Islands. The taped message describes what AIDS is, how it is and is not transmitted, risk behaviors and how to eliminate them, testing and where to go. A number is given at the end of the message for people who would like to talk to an operator or are interested in obtaining publications/information. Bilingual operators are available for Hispanic callers.	The American Social Health Association is providing a subcontract to the Association of State and Territorial Health Officers to evaluate the external process of the hotline. Members of the Public Health Foundation call the hotline randomly to determine the responsiveness of the system (i.e., Is the taped message running properly? Is it audible? How many rings before the message comes on or the operators answer? Are the operators responsive to the questions, and how are the interpersonal relationships with the operators?). CDC is not providing a separate evaluation.
National AIDS Information Clearinghouse[m,n]	Aspen Systems Corp/Kuthann Bates	Received $4.5 million from 9/87 to 9/89 (base year with 2 year options)	9/30/87 through 9/30/89	Clearinghouse provides an inventory of available AIDS information and educational services and will assist State and local AIDS personnel in using the database. The clearinghouse will help in determining information gaps for particular service groups. Specialists are available for black and Hispanic populations.	No formalized evaluation is planned. No quality impact evaluation has been planned yet. There may be a process based evaluation with some outcome evaluation.
Cooperative Agreement - Health Education and Information Programs to Prevent AIDS[o]	National organizations and national consortiums/ Beverly Schwartz (CDC)	Total of $1 million with supplemental funding possible.	9/1/88 through 9/1/89	This grant will be announced in June 1988. 10 agreements will be awarded by September 1, 1988 to national organizations and national consortiums to develop and implement effective health education and information programs while building innovative coalitions; the awards will range from $25,000 to $150,000.	Grantees will write evaluation components in their proposals. Overall evaluation of the program will examine the numbers of people spoken with, contacts developed, and diverse partnerships created.
Cooperative Agreement - Development and Distribution of American Red Cross AIDS Education Materials[o]	American Red Cross/Beverly Schwartz (CDC)	Up to $7 million	6/1/88 through 6/1/89	Target groups: general population, minorities, youth, and people in the workplace. Interventions: information and education programs. Will update and revise their brochures and develop 3 new brochures.	Determine if process and impact objectives have been met for the projects, but there is no overall program evaluation.

Table B-2.--AIDS Education Programs Funded by the Centers for Disease Control (CDC), May 1988 (Continued)

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
National Information/ Education Program Evaluation[k]	Macro Systems/Marty Kotler	$148,000, FY88	9/87 through 7 or 8/88.	Purpose: to develop an overall evaluation plan for the National AIDS Information/Education Program including an evaluation of the National Information/Education Campaign. Currently, getting baseline data about what CDC, CBOs, and other major organizations expect from the program (i.e., goals and objectives) in order to determine if evaluation of the program is possible. Will determine the processes necessary in order to meet goals and objectives.	This grant itself is an evaluation.

N.A. = Not Available
CBOs = community based organizations
IVDUs = intravenous drug users
PSAs = public service announcements
STD = sexually transmitted disease

[a] Table includes only those program components targeted to the general population, homosexual/bisexual men, IVDUs, STD clinic attendees, and school-age youth.
[b] Duncan, C., Center for Health Promotion and Education, Office of School Health and Special Projects, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA, personal communication, March 15, 1988, and May 19, 1988.
[c] U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, "Guidelines for Effective School Health Education to Prevent the Spread of AIDS," Morbidity and Mortality Weekly Report 37(S-2): 1-14, January 29, 1988.
[d] O'Reilly, K., Research Anthropologist, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA, personal communication, September 30, 1987.
[e] Conlon, D., Public Health Advisor, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA, personal communication, April 13, 1988, and May 12, 1988.
[f] Murguia, M., Assistant Executive Director, U.S. Conference of Mayors, Washington, D.C., personal communication, March 16, 1988.
[g] U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, Center for Prevention Services, Division of Sexually Transmitted Diseases, "Division of Sexually Transmitted Diseases and STD Laboratory Program Annual Report 1987-1988," internal document, Atlanta, GA, December 1987.
[h] 53 FR 3556.
[i] Bowen, S., Deputy Director, Center for Prevention Services, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA, personal communication, March 17, 1988.
[j] Shepard, M., Information/Education Specialist, National AIDS Information/Education Program, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA, personal communication, April 15, 1988.
[k] Williams, K., Program Analyst, National Information/Education Program, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA, personal communication, May 18, 1988.
[l] Duncan, W., National AIDS Information/Education Program, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA, personal communication, March 15, 1988.
[m] Baker, T., Chief, Information Services, National AIDS Information/Education Program, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA, personal communication, April 21, 1988.
[n] Bates, R., Project Manager, Aspen Systems Corporation, Rockville, MD, personal communication, May 6, 1988.
[o] Schwartz, B., Information/Education Specialist, National AIDS Information/Education Program, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services, Atlanta, GA, personal communication, April 20, 1988.

SOURCE: Office of Technology Assessment, 1988.

Table B-3.--AIDS Education Programs Funded by the Department of Defense (DoD), May 1988[a]

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
Office of the Assistant Secretary of Defense (Health Affairs):					
AIDS education units[b]	Department of Defense Dependent Schools/Frank Gallivan	N.A.	N.A.	Target groups: junior high and high school students overseas. Interventions: dissemination of videos ("Sex, Drugs, and AIDS" and "The AIDS Movie") and booklets ("Teacher Student Guides").	N.A.
1988 Department of Defense Substance Abuse and Health Behaviors Survey of Military Personnel[bc]	DoD/Col Peterson	N.A.	N.A.	Survey will include questions about HIV knowledge and attitudes from the National Health Interview Survey. Purpose: improve educational interventions to the troops. Preliminary data are expected fall 1988.	The survey itself is an evaluation of the DoD's educational programs.
Educational films, briefing packets, slide presentations, and other materials[b]	Military Services/ Antionette Hagey	$137,800, FY86 and FY87	FY86 and FY87	Target group: general military audience. Intervention: dissemination of films ("Beyond Fear" produced by the American Red Cross and "Facts Over Fears" distributed by MTI Film and Video) by Service Audiovisual Distribution Centers, briefing packets, slide presentations, and materials targeted for specific audiences.	Knowledge and attitudes will be assessed by the DoD Substance Abuse and Health Behaviors Survey.
Films[b]	DoD/Antionette Hagey	$71,500, FY86 and FY87	Purchased and distributed in 1986.	Target group: general military audience. Intervention: dissemination of "AIDS: Fears and Facts." The film was provided by the Public Health Service.	Knowledge and attitudes will be assessed by the DoD Substance Abuse and Health Behaviors Survey.
Public service television spots[bc]	DoD/Antionette Hagey	Only reproduction costs.	N.A.	Target group: military troops overseas. Intervention: 39 television spots.	Knowledge and attitudes will be assessed by the DoD Substance Abuse and Health Behaviors Survey.
Publication[bc]	Channing L. Bete Co, Inc./ Antionette Hagey (DoD)	$153,000 for 1.6 million copies	Purchased for 1986-87	Target group: general military audience. Intervention: dissemination of "What You Should Know About HTLV-III."	Knowledge and attitudes will be assessed by the DoD Substance Abuse and Health Behaviors Survey.

Table 8-3.--AIDS Education Programs Funded by the Department of Defense (DoD), May 1988 (Continued)

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
Publication[b,c]	Not yet determined/ Antionette Hagey (DoD)	Not yet determined. 1.8 million copies have been ordered.	Not yet determined	Target group: general military audience. Intervention: dissemination of "How to Protect Yourself from HIV and AIDS."	Knowledge and attitudes will be assessed by the DoD Substance Abuse and Health Behaviors Survey.
Impact Assessment of Walter Reid Army Institute of Research (WRAIR) Education and Prevention Program for AIDS[d]	Not yet determined/ David Uddin (DoD)	Not yet determined	2 years.	Will assess military educational programs.	Quarterly reports will be submitted, and technical reviews will be conducted on a continuing basis.

N.A. = Not Available

[a] Table includes only educational program components and does not include separate educational activities undertaken by each Military Service (e.g., Army, Navy, Air Force, Marines).
[b] Mazzuchi, J.F., Acting Deputy Assistant Secretary (Professional Affairs and Quality Assurance), Office of the Assistant Secretary of Defense, Department of Defense, Washington, D.C., personal communication, May 6, 1988.
[c] Hagey, A., Senior Program Analyst for Health Promotion, Assistant Secretary of Defense (Health Affairs), Department of Defense, Washington, D.C., personal communication, Washington, D.C., May 4, 1988.
[d] Uddin, D., Senior Policy Analyst for Medical Research, Office of the Assistant Secretary for Defense (Health Affairs), Department of Defense, personal communication, Washington, D.C., May 16, 1988.

SOURCE: Office of Technology Assessment, 1988.

Table B-4.--AIDS Education Programs Funded by the Department of Education, May 1988[ab]

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
AIDS and the Education of Our Children: Guide for Parents and Teachers	Department of Education/ Michael Jackson	Approximately $1 million (from discretionary funds) to print and distribute 1.7 million copies.	Printed on 10/6/87. Will print as long as requests continue	A guide for parents and teachers to help explain to children facts about AIDS, how to reduce contracting AIDS; provides sources of information.	Evaluation limited to the number of pamphlets requested and distributed (over 2 million copies so far).

[a] Jackson, M., Special Assistant to the Director of Public Affairs, Department of Education, Washington, D.C., personal communication, March 11, 1988.
[b] Walters, J., Assistant to the Secretary, Department of Education, Washington, D.C., personal communication, April 8, 1988.

SOURCE: Office of Technology Assessment, 1988.

Table B 5.--AIDS Education Programs Funded by Health Resources and Services Administration (HRSA), May 1988[a]

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
Bureau of Maternal and Child Health and Resources Development:					
Pediatric AIDS Demonstration Grants[b]	Private entities, non-profit and profit/John Hutchings (HRSA)	$4.435 million, FY88	1 to 3 years	10 to 20 grants will be awarded to private entities, non-profit and for profit, which develop strategies and models for the care of children with AIDS. 47 applications have been received and education components are included.	Will be written in grant proposals. In applications read, thus far, the type of evaluation that will be done includes counting the number of education programs and the number of people in the audience receiving the education. Some grantees comment that they are not sure how to conduct evaluation for this new grant.
Regionalized Family Stress and Risk Reduction Teams[cd]	National Hemophilia Foundation/ Sharon Barrett (HRSA)	$6.3 million for upcoming FY (Supplement to original grants.)	Continuous funding. AIDS supplements began in 1985.	Target group: hemophiliac community (hemophilia, spouse, and family). Each hemophiliac diagnostic and treatment center offers different educational interventions to the target group (i.e., one-on-one counseling, group sessions, dissemination of pamphlets dealing with teenagers and sexual intimacy, women, questions most often asked about AIDS and hemophilia). The National Hemophilia Foundation also operates as a clearinghouse for AIDS-related materials.	Currently, no formal evaluation, but will develop an evaluation tool in the future. Outcome data are being collected (i.e., activities and strategies going on in the field).
Demonstration grants[de]	National Hemophilia Foundation/ Sharon Barrett (HRSA)	$200,000 total	7/1/88 through 6/30/89	Demonstration funds will be made available to 10 chapters within the National Hemophilia Foundation to develop outreach strategies/models for culturally diverse populations with hemophilia.	Will be written in grant proposals.

[a] Table includes only those program components targeted to the general population, homosexual/bisexual men, intravenous drug users, sexually transmitted disease clinic attendees, and school-age youth.

[b] AIDS Record, "Over $24 million Available from Health Resources Services Administration for Three New Programs," AIDS Record 2(8/9): 7, April 8, 1988

[c] HRSA is offering this grant in conjunction with the Centers for Disease Control, Center for Infectious Diseases.

[d] Barrett, S., Director of Hemophilia Program, Office of Maternal and Child Health, Bureau of Maternal and Child Health and Resources Development, Health Resources and Services Administration, Public Health Service, U.S. Department of Health and Human Services, Rockville, MD, personal communication, May 12, 1988.

[e] U.S. Department of Health and Human Services, Public Health Service, Health Resources and Services Administration, Bureau of Maternal and Child Health and Resources Development, Abstracts of Active Projects FY 1988, (U.S. GPO: 1988-209-524).

SOURCE: Office of Technology Assessment, 1988.

Table B-6.--AIDS Education Programs Funded by the National Institutes of Health, May 1988[a]

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
National Cancer Institute (NCI):[b]					
HIV in New Jersey Drug Abusers (Intermural project)	NCI/Maryann Roper, John Hartinger	$22,000, FY88 (part attributable to education)	1984 through FY88	NCI is collaborating with the New Jersey State Department of Health in implementing an AIDS intervention targeted to IVDUs. Intervention: information dissemination about HIV transmission, risky behavior, and other AIDS facts.	Program impact will be determined, in part, through seroepidemiologic surveys conducted yearly and incidence of seroconversion. Preliminary results suggest increased knowledge levels in the exposed group.
National Heart, Lung, and Blood Institute (NHLBI):[cd]					
Blood Donor Recruitment Among High School Students	University of Washington/ Irwin Sarason	$94,000, FY88	1984 through 1988	Target group: high school students in 29 blood centers. Interventions: (1) informational approach (i.e., 3 1-hour sessions, audiovisual presentation), (2) motivational approach (i.e., 3 1-hour sessions, role playing, social skills, questionnaires), and (3) combination of the two.	Will evaluate knowledge gained under the 3 approaches and determine who donates and why. Will measure the number students volunteering to donate and their HIV blood status. Thus far, intervention 1 seems more effective with students already interested in donating, 2 seems more effective with students who have not thought about donating, and 3 seems more effective with all students.
Psychosocial Support for Anti-HIV Positive Donors	New York Blood Center/Johanna Pindyck	$436,000, FY88	1985 through 1989	Target group: HIV positive blood donors. Interventions: Subjects are divided into a control group, a group receiving individual counseling, and a group receiving individual as well as peer counseling.	Pre- and post-test data are being collected. A longitudinal analysis is being conducted as well as clinical followup to determine the progression of the disease.
National Institute on Aging (NIA):[e]					
AIDS Age Brief	NIA/Virginia Morgan	Approximately $17,000 to print and disseminate a typical age brief.	In the planning stages. Release probably May 1988.	Age briefs are disseminated regularly by NIA; typically 530,000 copies of each brief are distributed. The AIDS Age Brief will be a 2 to 3 page fact sheet and will deal with transmission of HIV in the elderly. It will be disseminated to the press, major organizations dealing with the elderly, minority organizations, physicians, grocery stores, etc.	None. Age Briefs are reviewed every few years.

Table B-6.--AIDS Education Programs Funded by the National Institutes of Health, May 1988 (Continued)

IVDUs = intravenous drug users

[a] Table includes only program components targeted to the general population, homosexual/bisexual men, IVDUs, sexually transmitted disease clinic attendees, and school-age youth.

[b] Cushing, M., Budget Analyst, National Cancer Institute, National Institutes of Health, Public Health Service, U.S. Department of Health and Human Services, Bethesda, MD, personal communication, April 15, 1988.

[c] McCurdy, P., Special Assistant for Clinical Hematology, Division of Blood Diseases and Resources, National Heart, Lung, and Blood Institute, National Institutes of Health, Public Health Service, U.S. Department of Health and Human Services, Bethesda, MD, personal communication, April 15, 1988.

[d] Czarra, A., Chief, Program Planning and Prevention Branch, National Heart, Lung, and Blood Institute, National Institutes of Health, Public Health Service, U.S. Department of Health and Human Services, Bethesda, MD, personal communication, May 17, 1988.

[e] Morgan, V., Writer/Editor, Information Office, National Institute on Aging, National Institutes of Health, Public Health Service, U.S. Department of Health and Human Services, Bethesda, MD, personal communication, April 15, 1988.

SOURCE: Office of Technology Assessment, 1988.

Table B-7.--AIDS Education Programs Funded by the Office of the Assistant Secretary for Health, May 1988[a]

Name of program/ contract/grant	Organization/ contact	Amount	Project period	Description	Evaluative component
Office of Minority Health (OMH):					
Minority Community Health Coalition Demonstration Projects[bc]	Not yet determined/ Henry Montes (OMH)	Total of $400,000	Project period: 2 years	Grant was announced in March. There will be a total of 8 grants awarded to community coalitions to develop programs to promote healthy behavior within minority communities. Two of these grants will be awarded to community coalitions providing AIDS education targeted to blacks and to Hispanics. Both grants will be up to $200,000 (given up front) for a 2 year project period.	Grantees will write evaluation components in their grant proposals. Grantees will also complete an outcome evaluation at the end of the project period.
Minority AIDS Education/ Prevention Grant Program[bc]	Not yet determined/ Jacqueline Bowles (OMH)	Total of $700,000	Project period: 3 years. Funds for 2nd and 3rd year contingent on availability of funds.	Solicitation for this grant will be announced in May. Fifteen to 20 grants will be awarded by September 30 to minority community based organizations and national minority organizations which conduct HIV infection education and risk-reduction programs; the awards will range from $20,000 to $75,000.	Grantees will write evaluation components in their grant proposals. Grantees will also complete outcome and process evaluations at the end of the 3rd project year.
Model Program Assessment[c]	Office of Minority Health/ Jacqueline Bowles	$100,000 to $150,000 to conduct this program	In planning stages	Will evaluate HIV risk-reduction and education programs throughout the country that target minority communities and identify essential components of successful programs.	This project is an evaluation of HIV risk-reduction and education programs.
Training package[bc]	Office of Minority Health/ Jacqueline Bowles	Not yet determined	In planning stages	Will develop HIV infection information guidelines and materials that minority organizations can use to initiate information and risk-reduction activities within their communities.	Not yet determined.

Table B-7.--AIDS Education Programs Funded by the Office of the Assistant Secretary for Health, May 1988 (Continued)

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[a] Table includes only those program components targeted to the general population, homosexual/bisexual men, intravenous drug users, sexually transmitted disease clinic attendees, and school-age youth.

[b] Montes, H., Associate Director for External Programs, Office of Minority Health, Office of the Assistant Secretary for Health, U.S. Department of Health and Human Services, Washington, D.C., personal communication, March 18, 1988.

[c] Bowles, J., Senior Science Advisor and AIDS Program Coordinator, Office of Minority Health, Office of the Assistant Secretary for Health, U.S. Department of Health and Human Services, Washington, D.C., personal communication, April 11, 1988, and May 7, 1988.

SOURCE: Office of Technology Assessment, 1988.

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